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ABSTRACT

The Allied Medical Development Project was conceived to determine the role of the St. Louis-St. Louis County Junior College District in the education of personnel for allied medical careers in the St. Louis area. The underlying assumption was that the development of needed programs on a sound basis in the St. Louis area would result in general concepts valuable to community colleges in other urban areas seeking to develop courses of study in the health field. During the investigative year, information was collected from representatives of health service facilities through interviews, questionnaires, and reviews of pertinent literature. During the second year, the data were analyzed, programs selected, and curriculums developed. During the third year, the major emphasis was upon implementation of the six selected programs, and a survey was carried out to determine what allied medical personnel were utilized by private practitioners of medicine, dentistry, and optometry. Other sections of the document deal with core curriculum, liaison with local and national organizations, student evaluation of programs, clinic affiliation, and specialized on-campus facilities. Appended are: (1) curriculums already developed and implemented, (2) tentative curriculums for future implementation, and (3) general academic requirements. (JK)

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FINAL REPORT to the W. K. KELLOGG FOUNDATION
BATTLE CREEK, MICHIGAN

The Allied Medical Development Project

FOREST PARK COMMUNITY COLLEGE

THE JUNIOR COLLEGE DISTRICT
ST. LOUIS — ST. LOUIS COUNTY, MISSOURI

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FOREST PARK COMMUNITY COLLEGE

THE ALLIED MEDICAL DEVELOPMENT PROJECT

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HOSPITALS

The Barnes Hospital Group
Cardinal Glennon Hospital
Deaconess Hospital
DePaul Hospital
Homer G. Phillips Hospital
The Jewish Hospital of St. Louis
Lutheran Hospital
Malcolm Bliss Mental Health Center
Missouri Baptist Hospital
Shriner's Crippled Children's Hospital
St. Anthony's Hospital
St. John's Mercy Hospital
St. Joseph's Hospital, Kirkwood, Missouri
St. Joseph's Hospital, St. Charles, Missouri
St. Louis City Hospital
St. Louis County Hospital
St. Louis State Hospital
St. Louis University Hospitals
St. Luke's Hospital
St. Mary's Hospital
John Cochran Veteran's Administration Hospital

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UNIVERSITIES

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School of Medicine

Washington University—School of Dentistry
School of Medicine

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Clinic of Internal Medicine—clinical affiliation for Medical Office Assistant program.

INTRODUCTION

The Metropolitan St. Louis area is a recognized center of medical service and education. In addition to more than forty hospitals, maintaining over 15,000 beds, there are two colleges of medicine and two colleges of dentistry. There are also a number of institutions for education beyond high school.

THE ST. LOUIS-ST. LOUIS COUNTY JUNIOR COLLEGE DISTRICT

The Junior College District is composed of three community colleges in various stages of construction. The Forest Park Community College, one of the three, is planned for 7,000 full-time students at completion. This College, which enrolled 3,500 students in 1967, is located conveniently near the greatest concentration of medical service and educational facilities. The Allied Medical Development Project was based on this campus and due to its location, it is the college selected for implementation of the largest number of health career curricula.

THE PROBLEM

There is a wealth of evidence that there are acute shortages of trained personnel available to health care institutions. It is equally clear that existing sources of educational preparation cannot keep pace with the increased demand for their graduates.

To complicate the problem, the cost of training is increasing. Many hospitals are engaged in training health personnel and, in most cases, much of this training cost must be reflected in the patient's expenses. To assist in slowing the increased costs of medical service, it is desirable to develop other sources of training which will allow more of the expense of training to be assumed by others than the recipient of the medical service.

THE ALLIED MEDICAL DEVELOPMENT PROJECT

In response to the problems stated, the Allied Medical Development Project was conceived to determine the role of the St. Louis - St. Louis County Junior College District in the education of personnel for allied medical careers in the St. Louis area.

The underlying assumption of the Project is that the development of needed programs on a sound basis in the St. Louis area will form general concepts valuable to community colleges in other urban areas seeking to develop courses of study in the health field.

ORGANIZATION

The approximate three year period of the Project was divided into three periods of approximately one year each. These three periods were designated as Phase I, II, and III.

The Project was staffed with a director having a medical administrative background, one faculty member from the division of Life Sciences, one from Physical Science and one from Sociology. In addition, a full-time secretary was appointed and at particular periods additional secretarial assistance was employed on a part-time basis.

While the Director was full-time, the faculty members were appointed to the Project on the following schedule:

Phase I	100% Project work
Phase II	50% Project work, 50% teaching
Phase III	25% Project work, 75% teaching

Although the three phases of the Project blended, each phase was designated by the principal type of work accomplished during that period.

Phase I	Planning and investigation
Phase II	Analysis of information collected and development of curricula
Phase III	Implementation of selected allied medical career curricula

In addition to the staff, an overall advisory committee was appointed. This committee was composed of knowledgeable persons from the fields of medicine, dentistry, medical administration and education. The faculty and administration of the College were also available for advice and assistance as necessary.

SUMMARY OF ACTIVITIES AND METHODS

PHASE I

The following methods were used to accomplish the investigative or information-gathering phase of the study:

1. The use of an unstructured interview, conducted within the health facility. In addition to the interview, this permitted observation of work and facilities, thus enlarging the interviewer's understanding. In general these interviews were of two types.
   A. A general interview conducted with a relatively high level of supervision. These interviews served to discover potential areas of study, acquaint the interviewees with our Project, and elicit their cooperation. These interviews also provided opportunity for the staff members to gain experience in interview techniques and become familiar with health service facilities.
   B. Following the general interviews, which demonstrated the most potential areas for study, in-depth interviews were initiated. These were focused on specific study areas and designed to discover detailed information about a specific job or area of study.
2. A review of literature relating to the health careers. The primary interest was to compile information on existing training programs, registry and certification requirements, licensing requirements, developmental studies and trends affecting health careers.
3. Development of survey questionnaires to be utilized to gain information for those areas in which the personnel were so disseminated that personal contacts could not accomplish the work.
4. The development of a standard method of reporting the information derived from our work. This reporting method would express a logical format to facilitate understanding and usage of the information by interested persons.

The individual staff member was permitted maximum freedom and flexibility with respect to the actual interview procedure, being guided only by the objectives of the Project and the necessity of observing the usual customs of any interview. All interviews were scheduled at the interviewee's facility and at his convenience.

The interview procedure was supplemented by correspondence, surveys, and review of literature.

The unstructured interview was judged to have both advantages and disadvantages. Those features considered advantageous are:

1. Permits maximum flexibility and allows the interviewee greater latitude of expression. This is particularly advantageous during the early periods of study designed to discover and define the particular areas of interest.
2. Promotes a maximum of interpretation for interviewee and interviewer to discover not only what is being done, but what might be done in the future.
3. Minimizes the orientation and instruction of the interviewer. Due to the high level background of the Project staff members and the demands of the Project, this was desirable.
4. More easily adapted to promote the flow of information from every level of interview.

Those elements considered possible disadvantages are:

1. This procedure does not promote a large number of interviews. More interview time is consumed in discussion, and the time involved in analysis and report writing is greatly increased.

*2. Forces maximum emphasis on the individual interviewer's analysis of what he has learned in the interview.

3. Interview reports must be written at the earliest opportunity during the period of maximum retention of detail.
4. Demands report writing at the completion of each interview in order to avoid confusion.
5. Consolidation of individual elements of information into a composite report is more difficult.
6. Frequently more than one visit is necessary to complete an interview.

Not all contacts resulted in interview reports. Those infrequent interviews which were non-productive or completely repetitive did not result in written reports. Occasionally, repeat interviews were necessary to accomplish one report. Those interviews involving more than one interviewee on the same subject sometimes resulted in only one interview report.

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*This is mentioned as both an advantage and a disadvantage, and is dependent on the individual qualities of the interviewer. In the case of this Project staff, it is considered as more of an advantage.

PHASE II

During this period, the staff completed most investigative activities initiated in Phase I. The investigative activities are never fully completed since information continues to develop and unforeseen problems appear requiring additional checking.

The major portion of this period was devoted to curriculum formation. This function may be divided into two parts:

1. Development of detailed curricula for programs being prepared for early implementation in the Junior College District.
2. Development of more general curricula for careers which had been studied, but immediate implementation is not planned.

Summary of activities

Additional information was sought using the methods developed during Phase I. These methods were:

1. Interviews conducted with technicians and professionals from the various fields being investigated.
2. Information exchange with other colleges and projects having similar interests.
3. Communication with accrediting and registry organizations representing the field of interest.
4. Mailed questionnaires in those fields where the individual employment locations are widely scattered. (Private practice of medicine and dentistry).

Although detailed results of the work accomplished is presented in the appendix of this report, it is felt that a description of the curriculum formation methods is important.

Selection of Programs for Development

An analysis of the material compiled during the investigative period revealed that the selection of programs to be developed for early installation could not be made using demand as the only decision factor. Many careers investigated indicated more than sufficient demand to justify the installation of curriculum. Due to this, other factors were used to select programs from this group. These factors were:

1. Feasibility of preparing the program for implementation within a given period of time.
2. Potential pay ranges for trained personnel.
3. Possibility of acquiring needed clinical facilities.
4. Existence of other training facilities.
5. Availability of instructors for technical courses.

Using these criteria as a guide, six career areas were selected and recommended as having good potential for development and installation.

At this point a developmental method used with success on other technical programs was utilized. A summary description of each program was prepared. This description contained information about the career, placement opportunities, estimated costs and other information pertinent to the program. The descriptions were submitted to the campus administration and the faculty council for their information and approval.

Selection of Advisory Committees

Concurrent with the foregoing activity, potential advisory committee members were selected from the professional field involved. The selections were made by examination of the many interviews to determine those persons particularly interested and knowledgeable. The advisory committee size ranged from five to nineteen persons.

Once approval for curriculum development was gained at the campus level, the persons selected for advisory committee membership were contacted and asked whether or not they could serve in this capacity. Names and backgrounds of those selected were submitted to the College District Board of Trustees for official appointment.

Duties of Advisory Committee

Advisory committees are expected to provide information relative to the following:

1. Subject matter to be covered in the technical courses.
2. Number of graduates which could be placed.
3. Relationships with registries or other accrediting organizations in the respective field.
4. Student recruitment and selection criteria.
5. Technical faculty qualifications and availability.
6. Identification and availability of needed clinical facilities.
7. Identification and solution of potential problems.

Advisory Committee—College Relationship

Prior to the first meeting of the advisory committees, a tentative curriculum was constructed for each program using information gained during the investigative period. These curricula were presented to the advisory committees in advance of the initial meeting, when possible. The committees were instructed that this curriculum was tentative, subject to modification and was to be used as a working copy. While this approach reduced the time consumed in committee meetings, it presupposes that sufficient information has been gained to allow tentative curriculum formation in advance.

This tentative curriculum is then revised in accordance with the committee's advice and academic principles, and returned to them for additional study. The process is repeated, within reason, until the curriculum reflects the committee's thinking.

The curriculum is then routed through the college academic committees. If further changes are minor, the curriculum is presented to the final approval body of the College; if any changes seriously affect course content or sequence, the curriculum should be checked again with the advisory committee before being presented for final approval.

The advisory committee structure should be continued after the curriculum is approved. Their role now becomes one of assisting in student and faculty recruitment, identifying clinical facilities and assisting in relationships with registries. The committee can also be helpful in identifying equipment for specialized laboratory facilities.

Factors vital to program installation

In addition to the curriculum formation activity described, other factors are important to any decision relative to program implementation.

The specific factors relating to each program are described in the section of the appendix relating to the respective program. There are, however, several factors relating to any program being considered for implementation. These items are not presented in any order of importance, since the absence of any will present a barrier to installation.

Faculty qualifications for technical portions of the curriculum must be decided and faculty members identified. Trained personnel are in short supply and the competition for their talents is great. The ease or difficulty experienced in this project may be used as a general guide, since our recruiting was conducted on a national scope.

Special training facilities and equipment, on and off campus, must be identified and budgeted. While it is true that some curricula require minimal expenditure, others require extensive facilities. For those programs which require affiliation with a community clinic facility, the school must ascertain that convenient facilities are available for use, and the number of students which can be accommodated.

If the potential job market for graduates has not been checked, this should be accomplished. There must be reasonable assurance of placement of graduates in positions commensurate with their training.

In the highly competitive market for youth, there appears to be no certain way of determining student availability. Those curricula which have not had promotion in the public news media will need more intensive student recruitment. It is interesting to note that those programs having a related career in the same office or laboratory, at a lower salary and prestige level, enjoy the greatest popularity. This is evidenced by applicants to the Dental Hygiene curriculum. In a very short time, the class was filled. Approximately 90% of the applicants were dental assistants, or persons having experience in dental offices. Those curricula not having this kind of relationship with another career require far more recruitment effort.

PHASE III

During this period many of the activities initiated during Phases I and II continued, however, the major emphasis was related to the implementation of six selected allied medical curricula.

The results of this work are presented in the sections of this report concerned with the individual programs.

Results of questionnaire surveys

Questionnaire surveys were used to determine allied medical personnel utilized by the private practitioner of medicine, dentistry and optometry.

The results of those questionnaire surveys follow:

Dental Survey

As a part of a study of the dental auxiliary field, a questionnaire survey was made of the active membership of the Greater St. Louis Dental Society and the Mound City Dental Society. (The combined society memberships amount to 95%

of the practicing dentists in the St. Louis area.) The questionnaire was drawn up after spot interviews indicated that:

1. The deans of the dental schools of Washington and St. Louis Universities would encourage the Junior College District's offering curricula in dental hygiene and dental laboratory technology.
2. The practicing dentists in the St. Louis area would strongly support a curriculum by the Junior College in dental hygiene.
3. The larger commercial dental laboratories in the area would probably not be interested in hiring the graduates of a Junior College laboratory technician program, but probably would be willing to supply part-time faculty.

Before sending out the questionnaires, the form and suggested cover letter reviewed with the Greater St. Louis Dental Society's President, the Chairman of its Council on Professional Affairs, and the Chairman and the membership of its council on education. A copy of the final form and cover letter is attached hereto.

Out of a total of 935 questionnaires mailed to the societies' memberships, 22% were returned within ten days. Another 5% came in during the following three weeks, presumably as a result of a reminder which the Dental Society had arranged to run in its monthly bulletin immediately following the original mailing. This compares favorably with the response of 22% and 32% which the American Dental Association received in 1962 and 1964 to questionnaire surveys on similar subjects mailed to its national membership.

Tables I, II, and III, attached, summarize the tabulated results on the three classes of dental auxiliary studied. Comments made by the respondents will be discussed under the auxiliary classification to which the comment applies.

DENTAL ASSISTANT

Conclusions which may be drawn from Table I are as follows:

1. On the average each dentist in St. Louis uses 1.25 full-time and 0.32 part-time chairside assistants.
2. 58% of the assistants receive a salary in the range of $250 to $349 per month.
3. 82% of present assistants are high school graduates who have been trained on the job by their employers.
4. 77% of the respondents would desire their assistants to be graduates of a one to two-year junior college curriculum.

Application of the ratio of 1.25 full-time assistants per dentist to the approximately 1,000 practicing dentists in the St. Louis area would lead to a figure of 1,250 full-time dental assistants in current practice. If the average initial working life is assumed to be four years, and it is further assumed that approximately half of the openings created by turnover are filled by former assistants returning to their profession after an absence, a demand of 150 newly trained assistants per year

Table I

DENTAL (CHAIRSIDE) ASSISTANT

Basis: 254 replies from 935 questionnaires mailed

Present Employment:	**No.**	**Per Reply**	
Part-time	82	0.32	
Full-time	321	1.25	

Present Salaries, $ per Month:	**Replies**	**Percent**	
Up to 200	38*	10*	
200 to 249	52	14	
250 to 299	115	30	58
300 to 349	108	28	
350 to 399	36	9	
400 to 449	32	8	
450 to 499	2	0.5	
Above 500	2	0.5	
		100	

Additional Personnel Desired:	**No.**	**Per Reply**	
Part-time	20	.08	
Full-time	34	.13	

Present Educational Background:	**Replies**	**Percent**	
H.S. or H.S. + on-the-job training	274	82	
H.S. + formal training			
for 1 year	34	10	
for 2 years or more	27	8	
		100	

Desired Educational Background:	**Replies**	**Percent**	
H.S. or H.S. + on-the-job training	53	23	
H.S. + formal training			
for 2 semesters	95	41	77
for 3 or 4 semesters	84	36	
		100	

*Stated by respondent, in most cases, to apply to part-time assistant only.

is indicated for replacement purposes. If 50 per year are added for expansion (4% per year of those currently in practice), a total of 200 per year is reached. It would seem that the Junior College District might train 50% of these, which would result in a demand of 100 full-time dental assistants per year from the Junior College.

The question of whether the dental assisting curriculum should be two semesters or more elicited a great deal of comment. Several respondents took the position that it was a decision for the educational institution to make, on the basis of its requirements to produce a well-rounded person. Others took strong positions for a three or four semester program, including liberal arts, on the basis that it was necessary to enable the assistant to deal properly with patients. Others preferred a minimum program on the basis that any added education would drive the starting salary up and make it necessary to raise fees. The overall tabulation, as indicated in Table I, was approximately 50-50 for the two semester minimum program and the three or four semester program including some liberal arts, business, and professional behavior courses.

DENTAL HYGIENIST

The following conclusions may be drawn from Table II:

1. Only 5% of the dentists in the St. Louis area have the full-time use of a hygienist and 6% have the part-time use of one.
2. Hygienist earnings are normally in excess of $500 per month. (Many respondents mentioned a standard fee of $30 per day, which would correspond to $650 per month on the basis of a five day week.)
3. From three to four times as many hygienists are desired by the dentists as are now in practice.
4. Most of the hygienists now practicing are graduates of a two-year program, often following one to two years of college. This educational pattern, for the most part, is the one desired by the dentist.

The St. Louis area usage of hygienists (11% part-time plus full-time) may be compared to a national average of 20.4% and a Midwest regional average of 17.1% as determined by the 1964 American Dental Association survey. Further corroborating information on the low ratio of hygienists to dentists in St. Louis is given by the 1964 Missouri State Roster of Licensed Dentists and Dental Hygienists which lists a ratio of .04 to 1 for St. Louis and a ratio of 0.11 to 1 for Kansas City.

If the questionnaire values for the additional personnel desired are added to the questionnaire values for present employment, a total of over 200 full-time practicing hygienists is indicated for the St. Louis area, as compared to the present population, as given by the State Roster, of less than 40. It is possible that the questionnaire analysis has exaggerated the present shortage, due to a tendency for those dentists who feel the shortage most acutely (i.e., those equipped for, but now unable to get, a full-time hygienist) to be most apt to reply to the questionnaire, thus arti-

Table II

DENTAL HYGIENIST

Basis: 254 replies from 935 questionnaires mailed

Present Employment:	**No.**	**Per Reply**
Part-time	15	.06
Full-time	14	.05

Present Salaries, $ per month:	**Replies**	**Percent**
Up to 300	2*	7*
300 to 349	0	0
350 to 399 (full-time basis)	3*	11*
400 to 449	2*	7*
450 to 500	3	11
Above 500	17	64
		100

Additional Personnel Desired:	**No.**	**Per Reply**
Part-time	32	.13
Full-time	43	.17

Present Educational Background:	**Replies**	**Percent**
H.S. + formal training		
for 2 years	7	37
for 3 years	9	47
for 4 years	3	16
		100

Desired Educational Background:	**Replies**	**Percent**
H.S. + formal training		
for 2 years	28	37
for 3 years	43	58
for 4 years	4	5
		100

*Persons reported as hygienists in these salary ranges, although not so stated by the respondent, are probably actually working as chairside assistants.

ficially raising the demand figures. There is no doubt of the shortage, however. Even on the basis of the comparative St. Louis-Kansas City figures, an additional .07 hygienists per dentist are needed, for a total of 70 additional hygienists. It is also possible, of course, that the shortage will prove to be larger than this—that the greater availability of hygienists will increase the demand through competitive pressures on the dentist not now using one. In any case, it would seem that the St. Louis area should have at least 100 practicing hygienists.

On the basis of this latter figure, and on assumptions similar to those used in the calculation of replacement needs for dental assistants (but assuming a five-year initial working life), ten newly trained hygienists will be needed each year for replacement purposes alone. This continuing demand, coupled with the need to build up the number in practice, makes it certain that graduating classes of at least 20 per year could be placed in the St. Louis area for a number of years.

From the comments offered by the respondents, there seems to be a fairly general dissatisfaction with the present practice, inherent in the licensing laws, of limiting the hygienists' duties to prophylaxis, x-ray, and patient instruction. Some respondents also expressed the feeling that men should be admitted to the curriculum, since the earnings are sufficient to support a family, and since men would presumably have a longer professional working life than women.*

DENTAL LABORATORY TECHNICIAN

The following conclusions may be drawn from Table III:

1. On the average, each dentist in St. Louis employs 0.17 full-time technicians and 0.02 part-time technicians.
2. More than half of the technicians employed by dentists are paid in the range of $350 to $499 per month.
3. A small number (perhaps 10 on a full-time basis) of additional technicians is desired.
4. Slightly more than half of the present technicians have an educational background of high school plus on-the-job training. The rest have had two to three years of formal training in their profession.
5. Formal training for the technician is desired by most dentists. Of the various ADA curricula, that of the "generalist" is most desired, with that for the ceramics-gold and/or crown and bridge specialist being next.

It is possible that the figures for the present use of technicians are exaggerated due to a greater tendency for those dentists who are equipped to employ a technician to reply to the questionnaire. For comparison purposes, the 1964 national use of technicians by dentists as determined by the ADA is 8.9% and the Midwest regional use is 7.8%.

Table III

DENTAL LABORATORY TECHNICIAN

Basis: 254 replies from 935 questionnaires mailed

Present Employment:	**No.**	**Per Reply**
Part-time	6	.02
Full-time	43	.17

Present Salaries, $ per month:	**Replies**	**Percent**	
Up to 300	4	16	
300 to 349	3	12	
350 to 399 (Full-time Basis)	4	16	
400 to 449	4	16	56
450 to 499	6	24	
Above 500	4	16	
		100	

Additional Personnel Desired:	**No.**	**Per Reply**
Part-time	11	.04
Full-time	8	.03

Present Educational Background:	**Replies**	**Percent**
H.S. or H.S. + on-the-job training	15	60
H.S. + formal training		
for 1 year	2	8
for 2 years	5	20
for 3 years	3	12
		100

Desired Educational Background:	**Replies**	**Percent**
H.S. or H.S. + on-the-job training	2	6
H.S. + formal training for 2 years:		
as generalist	19	60
as orthodontics specialist	3	9
as ceramics-gold and/or crown and bridge specialist	8	25
		100

---

*The Dental Hygiene program is open to men. No applications or inquiries have been received from males.

Even the high figure of 185 practicing technicians employed by dentists (obtained by ratioing the questionnaire results to the total dentist population) is used, the yearly demand for dental technicians would be relatively small. Most technicians are men, and if they survive the initial period of adjusting to their profession, usually stay in it for at least 15 to 25 years. Thus, a maximum demand of perhaps 12 a year would be forecast, with the probability that this might be reduced to half that figure or less by factors previously discussed.

CONCLUSIONS

Dental Chairside Assistant

An annual demand, for replacement and expansion purposes, of 100 graduates of a junior college program is foreseen for the St. Louis area. Graduates should be able to earn in the neighborhood of $250 to $349 per month for full-time work. Opinion is about evenly divided between a two semester and a three or four semester program.

Dental Hygienist

An annual demand of at least 20 graduates per year from a two-year junior college program is foreseen for several years. Graduates should be able to earn up to $650 per month for full-time work. As the supply of practicing hygienists is built up, demand may fall, or more probably, may increase through greater acceptance of them by the dentist. Opinion is strongly in favor of requiring a year of college before admission to the dental hygiene program.

Dental Laboratory Technician

An annual demand of 6 to 12 per year is indicated from a two-year program to train generalists of ceramic-gold and/or crown and bridge specialists. A qualified graduate, who is temperamentally suited to his profession, should be able to earn from $359 to $499 per month after some experience. There are indications, however, that the questionnaire response on the dental laboratory technician may not be representative of the dental profession in St. Louis and that these demand figures may be high.

SUMMARY

Based on a questionnaire survey of the membership of the Greater St. Louis Dental Society and the Mound City Dental Society, it is estimated that there is a continuing potential demand by the practicing dentist for the following dental auxiliaries in the St. Louis area:

Dental Assistant	100 per year
Dental Hygienist	at least 20 per year
Dental Laboratory Technician	less than 6 to 12 per year

Opinion seems to be approximately evenly divided among the dentists as to whether a one-year program or more is desirable in dental assisting; however, most would support a junior college program as compared to the present practice of on-the-job training by the employer. The predominant opinion with respect to the dental hygienist training is that a year of college should be required before admittance to the two-year dental hygiene program.

The questionnaire results appear to be valid when compared with other sources of information on the availability and demand for dental assistants and hygienists. There are indications from other sources of information, however, that the response on the dental laboratory technician may not be representative of the dental profession in St. Louis and that the potential demand figures given for this occupation may be higher than would actually be realized.

Physicians' Questionnaire

The questionnaire used to determine the use of auxiliary personnel in physicians' offices was circulated to members of the County Medical Society and the City Medical Society. As with the dental questionnaire, it was planned that an explanatory cover letter signed by the president of the respective society be utilized.

In the case of the County Medical Society, the letter was signed by the President of the Society on the Society's letterhead stationery. The City Medical Society did not cooperate to this extent, therefore, the same letter was used on college stationery and signed by the Project Director. A 33% sample of the membership of each Society was used. In order to determine if the use of the Society's letterhead and the President's signature made a significant difference in the response, the County Medical Society members were sent questionnaires on buff paper, the City Society on white. The response is shown in Table I.

Sixty-five of the returns were from physicians in group practice representing a total of 152

Table I

	City	County	Total
Size of Sample (33%)	385	128	513
Cover letter by	Project Director	Society President	
Number Responding	148	57	205
% Responding (Approx.)	38%	45%	40%

physicians. One hundred and forty returns were from physicians in solo practice.

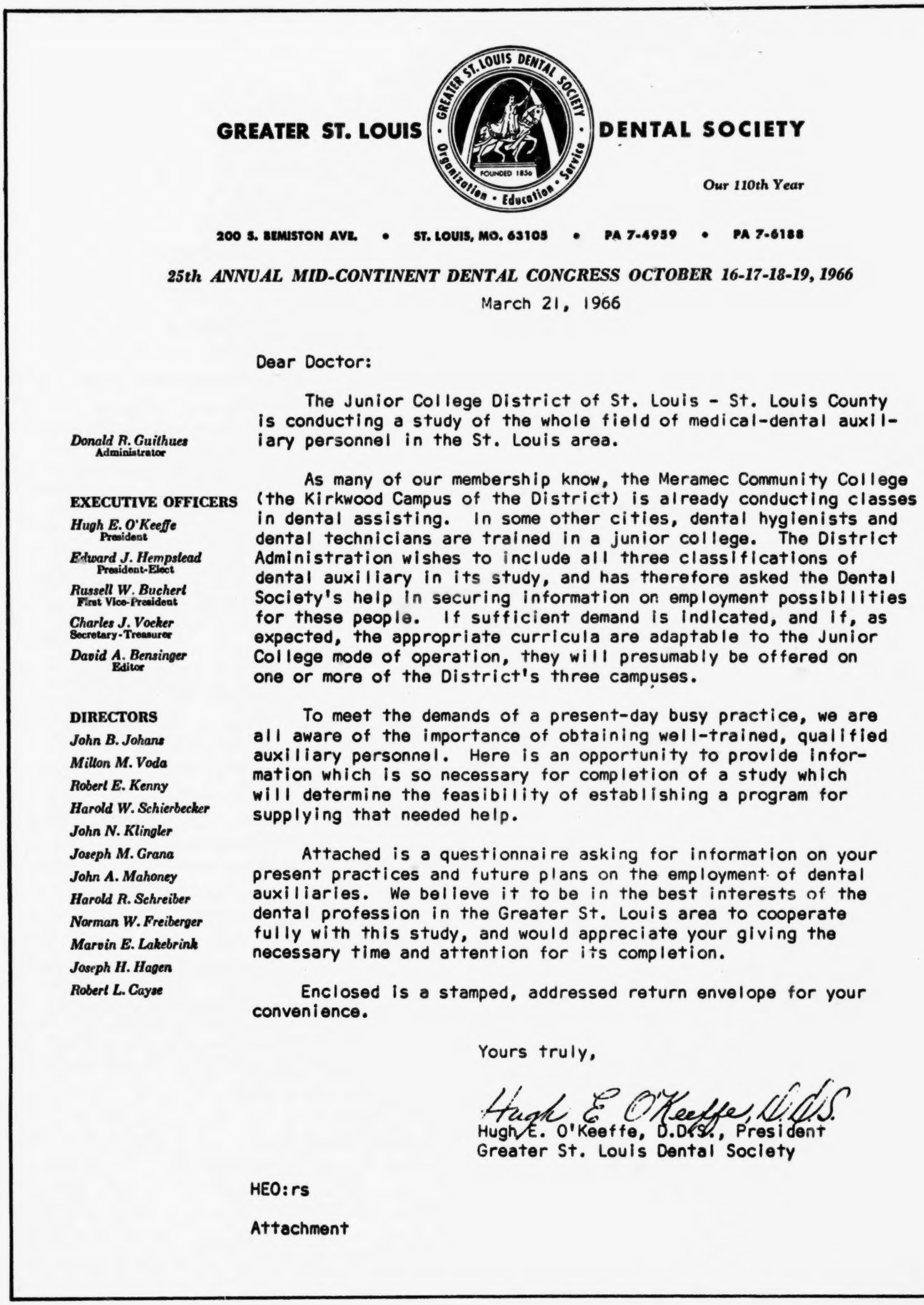
The returns indicated the physicians felt a junior college training program to train office assistants was greatly needed. The desired training should encompass clerical and clinical practice. The dominant salary range reported. was $300 to $399 per month.

Optometric Survey

A study of the ophthalmic and optical fields in St. Louis as possible outlets for graduates of junior college career programs has led to the conclusion that the optometrist's assistant is the largest single job classification in the optical field suitable to junior college training. A mail questionnaire sent out during the summer of 1966 to 155 members of the St. Louis Optometric Society over the signature of their President, established that:

1. Employment of an office assistant by optometrists is quite common—roughly one assistant (full-time basis) per optometrist seems to be a fair average at the present time.
2. The large majority (84%) of full-time assistants receive a salary in the range of $250 to $399 per month.
3. The desired training for the optometrist's assistant seems to be one that is a combination of secretarial procedures and professional assisting procedures.

On the assumption that the average initial working life of the optometrist's assistant is four years, that half of the openings created by turnover are filled by former assistants returning to their profession, that a growth rate in demand for optometric services of 4% per year is present, and that the District can reasonably expect to train half of the newly-hired assistants, there should be a continuing demand for twelve graduates per year of a junior college program in optometric assisting. This coupled with the probability that a person with the same training might also be well-qualified as a retail sales employee in an optical store, leads to the conclusion that it would be practical to offer a specialized curriculum in optometric assisting, designed to graduate at least fifteen students per year.



GREATER ST. LOUIS DENTAL SOCIETY

Our 110th Year

200 S. BEMISTON AVE. • ST. LOUIS, MO. 63105 • PA 7-4959 • PA 7-6188

25th ANNUAL MID-CONTINENT DENTAL CONGRESS OCTOBER 16-17-18-19, 1966

March 21, 1966

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Dear Doctor:

The Junior College District of St. Louis - St. Louis County is conducting a study of the whole field of medical-dental auxiliary personnel in the St. Louis area.

As many of our membership know, the Meramec Community College (the Kirkwood Campus of the District) is already conducting classes in dental assisting. In some other cities, dental hygienists and dental technicians are trained in a junior college. The District Administration wishes to include all three classifications of dental auxiliary in its study, and has therefore asked the Dental Society's help in securing information on employment possibilities for these people. If sufficient demand is indicated, and if, as expected, the appropriate curricula are adaptable to the Junior College mode of operation, they will presumably be offered on one or more of the District's three campuses.

To meet the demands of a present-day busy practice, we are all aware of the importance of obtaining well-trained, qualified auxiliary personnel. Here is an opportunity to provide information which is so necessary for completion of a study which will determine the feasibility of establishing a program for supplying that needed help.

Attached is a questionnaire asking for information on your present practices and future plans on the employment of dental auxiliaries. We believe it to be in the best interests of the dental profession in the Greater St. Louis area to cooperate fully with this study, and would appreciate your giving the necessary time and attention for its completion.

Enclosed is a stamped, addressed return envelope for your convenience.

Yours truly,

Hugh E. O'Keeffe, D.D.S.

Hugh E. O'Keeffe, D.D.S., President
Greater St. Louis Dental Society

HEO:rs

Attachment

Dental Cover Letter

SURVEY OF USE OF DENTAL AUXILIARIES

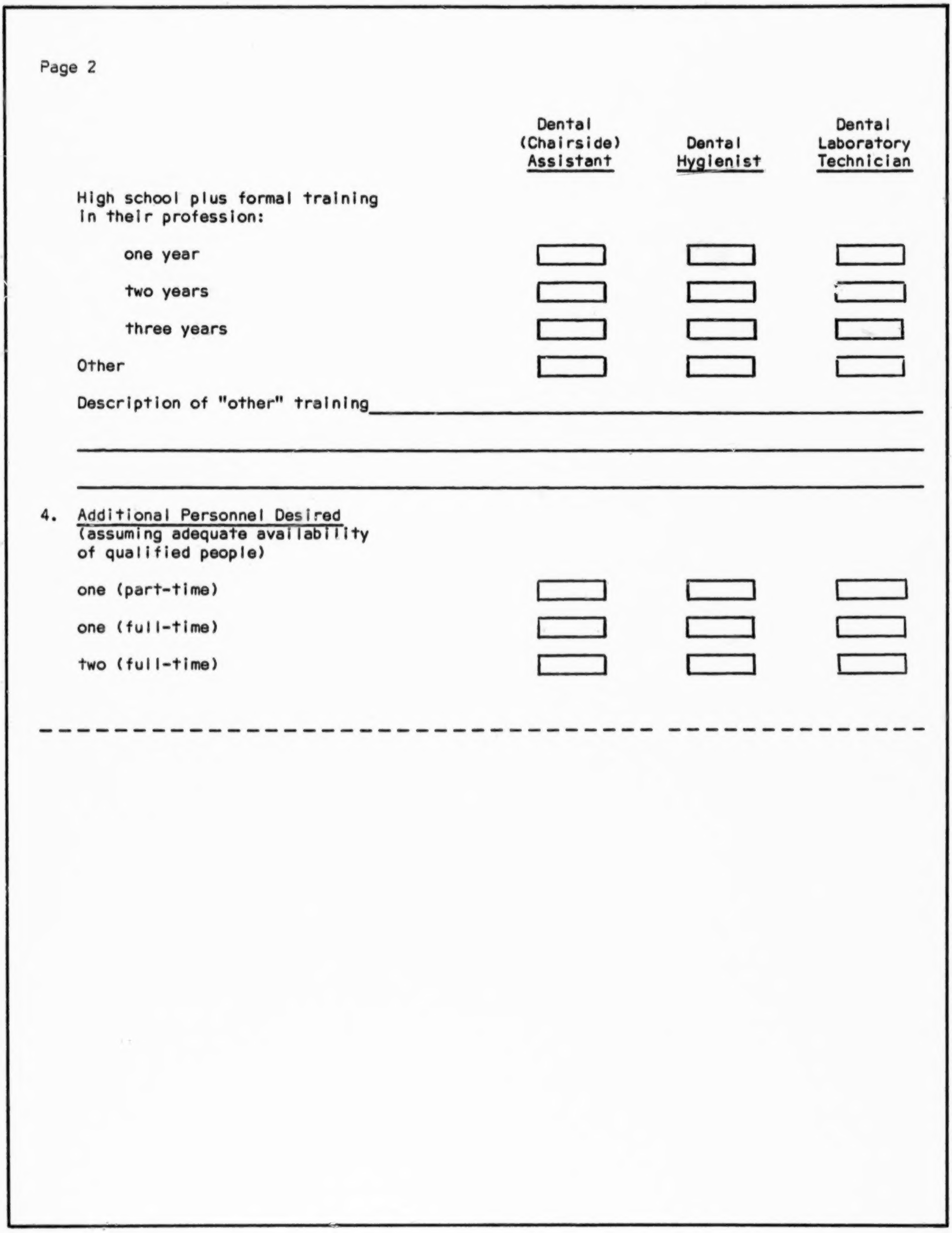
Address of dental offices (including postal zone number)____________________

____

Year of graduation from dental school__________Type of practice__________________

		Dental (Chairside) Assistant	Dental Hygienist	Dental Laboratory Technician
1. Present Personnel				
one (part-time)		☐	☐	☐
one (full-time)		☐	☐	☐
two (full-time)		☐	☐	☐
three (full-time)		☐	☐	☐
2. Present Salaries (full and part-time) (place as many checks as you have auxiliaries)				
Full-time	Part-time			
up to $199/mo.	(up to $10/day)	☐	☐	☐
$200/mo. to $249/mo.	(approx. $11.50/day)	☐	☐	☐
$250/mo. to $299/mo.	(approx. $14/day)	☐	☐	☐
$300/mo. to $349/mo.	(approx. $16.50/day)	☐	☐	☐
$350/mo. to $399/mo.	(approx. $19/day)	☐	☐	☐
$400/mo. to $449/mo.	(approx. $21.50/day)	☐	☐	☐
$450/mo. to $499/mo.	(approx. $24/day)	☐	☐	☐
$500/mo. and up	($25.50/day and up)	☐	☐	☐
3. Present Educational Background (place as many checks as you have auxiliaries)				
High school only		☐	☐	☐
High school plus on-the-job training		☐	☐	☐

Dental Questionnaire



Page 2

	Dental (Chairside) Assistant	Dental Hygienist	Dental Laboratory Technician
High school plus formal training in their profession:			
one year	☐	☐	☐
two years	☐	☐	☐
three years	☐	☐	☐
Other	☐	☐	☐

Description of "other" training______________________________

____

____

	Dental (Chairside) Assistant	Dental Hygienist	Dental Laboratory Technician
4. Additional Personnel Desired (assuming adequate availability of qualified people)			
one (part-time)	☐	☐	☐
one (full-time)	☐	☐	☐
two (full-time)	☐	☐	☐

- -

Dental Questionnaire

Page 3

5. Desired Educational Background for Auxiliary Personnel
(check only those categories where you have indicated
a present use or a future need for auxiliary personnel)

Dental Assistant
(check only one box)

- High school only ☐
- High school plus on-the-job training by other dentists ☐
- High school plus two semesters of college training, primarily in chairside assisting techniques ☐
- High school plus three or four semesters of college training, which includes some liberal arts, business, and professional behavior courses in addition to courses in chairside assisting ☐

Comments

Dental Hygienist

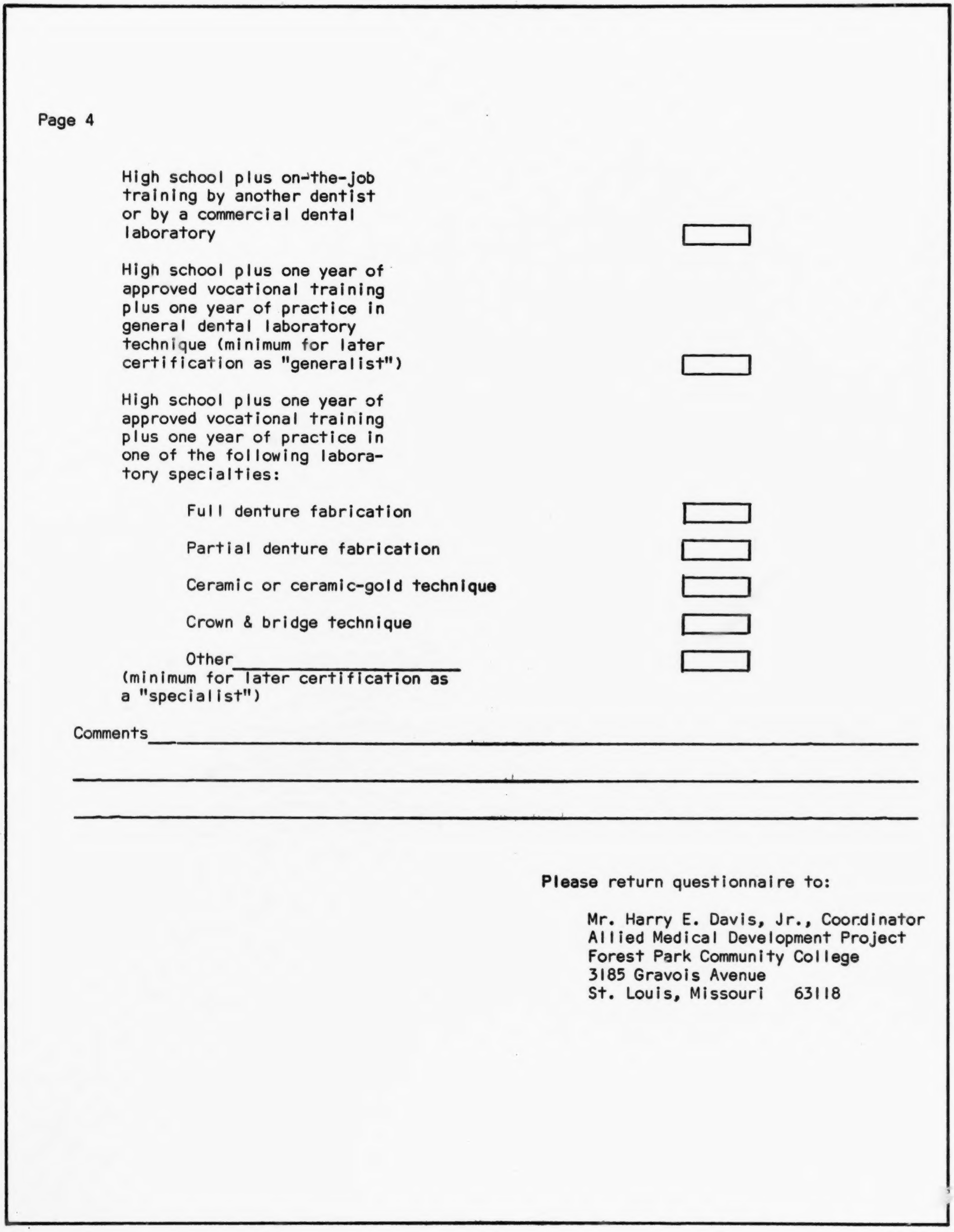
The two-year Junior College curriculum in dental hygiene is more or less fixed by the requirements of the State licensing examination. We might, however, wish to require hygienist candidates to take one or two semesters of liberal arts - professional behavior - business courses (along with dental assisting students) before admission to the dental hygiene curriculum. We would like your comments on this, together with any suggestions you may care to offer for subject matter.

Comments

Dental Laboratory Technician (for personal use)
(check only one box)

- High school only ☐

Dental Questionnaire



Page 4

High school plus on-the-job training by another dentist or by a commercial dental laboratory ☐

High school plus one year of approved vocational training plus one year of practice in general dental laboratory technique (minimum for later certification as "generalist") ☐

High school plus one year of approved vocational training plus one year of practice in one of the following laboratory specialties:

- Full denture fabrication ☐
- Partial denture fabrication ☐
- Ceramic or ceramic-gold technique ☐
- Crown & bridge technique ☐
- Other______________________ ☐

(minimum for later certification as a "specialist")

Comments____

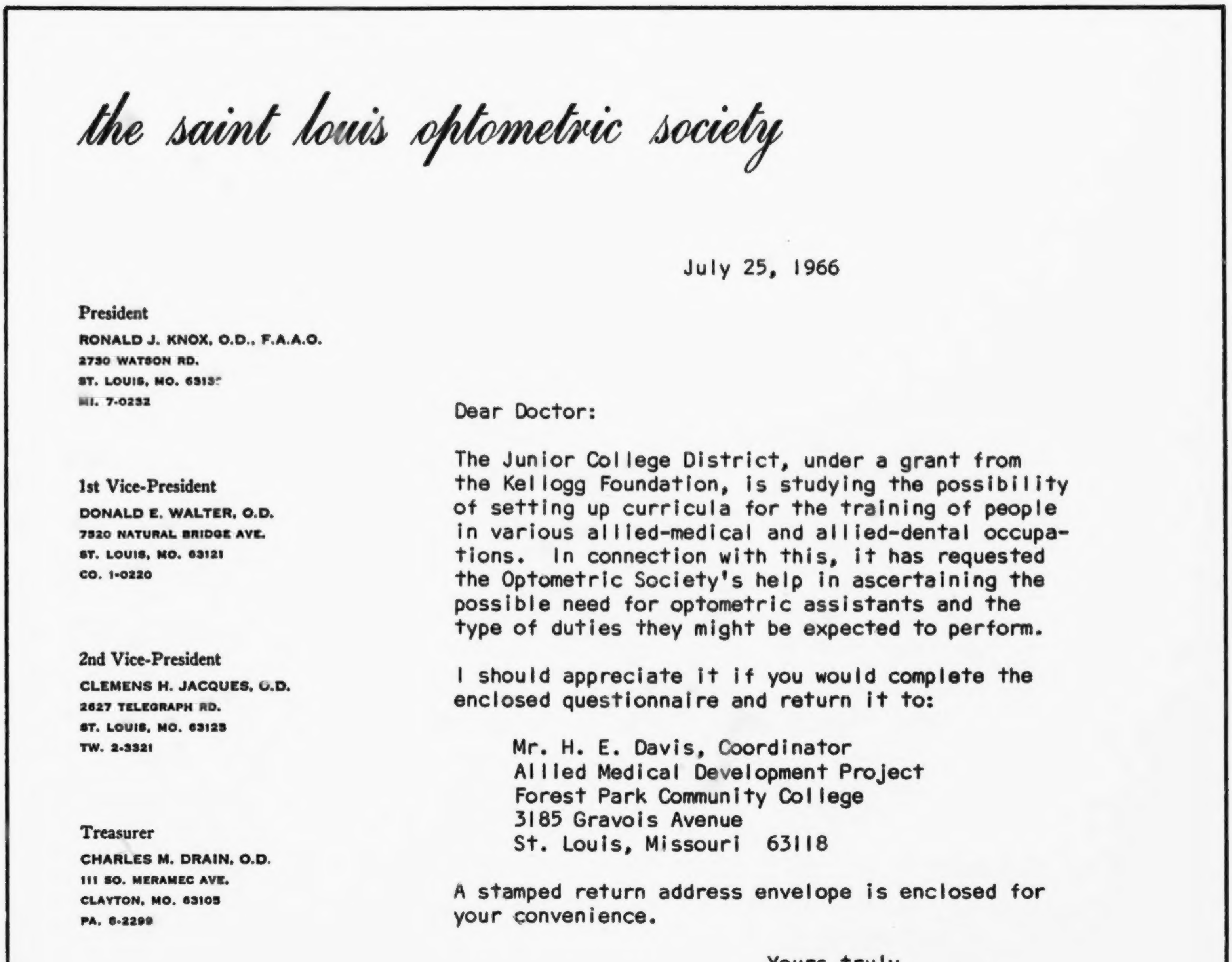
____

____

Please return questionnaire to:

Mr. Harry E. Davis, Jr., Coordinator
Allied Medical Development Project
Forest Park Community College
3185 Gravois Avenue
St. Louis, Missouri 63118

Dental Questionnaire



the saint louis optometric society

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TE. 1-2520

Society Office
7000 CHIPPEWA ST.
ST. LOUIS, MO. 63119
HU. 1-1211

July 25, 1966

Dear Doctor:

The Junior College District, under a grant from the Kellogg Foundation, is studying the possibility of setting up curricula for the training of people in various allied-medical and allied-dental occupations. In connection with this, it has requested the Optometric Society's help in ascertaining the possible need for optometric assistants and the type of duties they might be expected to perform.

I should appreciate it if you would complete the enclosed questionnaire and return it to:

Mr. H. E. Davis, Coordinator
Allied Medical Development Project
Forest Park Community College
3185 Gravois Avenue
St. Louis, Missouri 63118

A stamped return address envelope is enclosed for your convenience.

Yours truly,

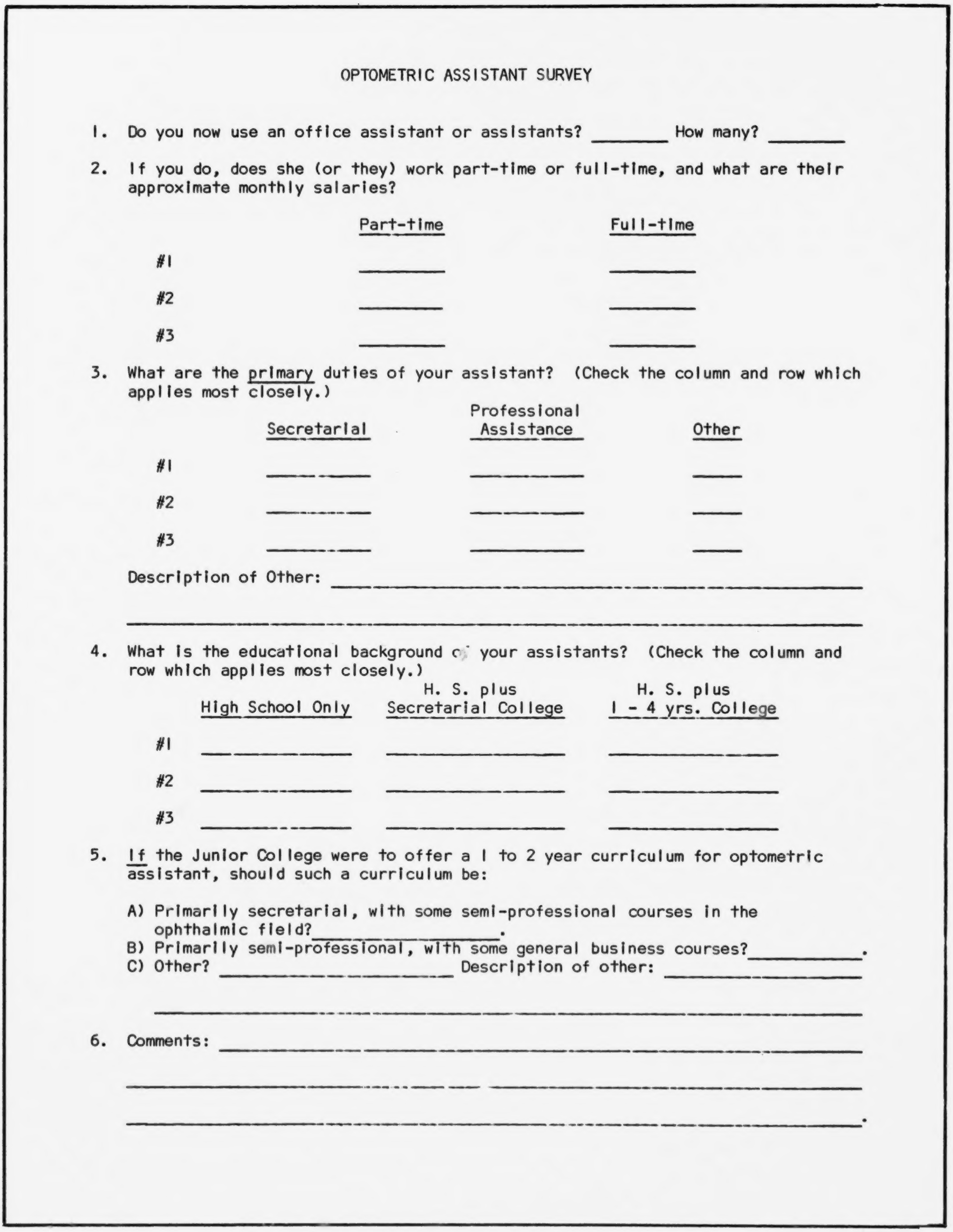
Ronald J. Knox, O.D.
President

rs

Enclosures

optometry . . . the art and science of visual care

Optometric Cover Letter



OPTOMETRIC ASSISTANT SURVEY

1. Do you now use an office assistant or assistants? ________ How many? ________

2. If you do, does she (or they) work part-time or full-time, and what are their approximate monthly salaries?

	Part-time	Full-time
#1	________	________
#2	________	________
#3	________	________

3. What are the primary duties of your assistant? (Check the column and row which applies most closely.)

	Secretarial	Professional Assistance	Other
#1	________	________	____
#2	________	________	____
#3	________	________	____

Description of Other: ____

____

4. What is the educational background of your assistants? (Check the column and row which applies most closely.)

	High School Only	H. S. plus Secretarial College	H. S. plus 1 - 4 yrs. College
#1	____________	____________	____________
#2	____________	____________	____________
#3	____________	____________	____________

5. If the Junior College were to offer a 1 to 2 year curriculum for optometric assistant, should such a curriculum be:

A) Primarily secretarial, with some semi-professional courses in the ophthalmic field?____________.
B) Primarily semi-professional, with some general business courses?__________.
C) Other? ________________ Description of other: ______________

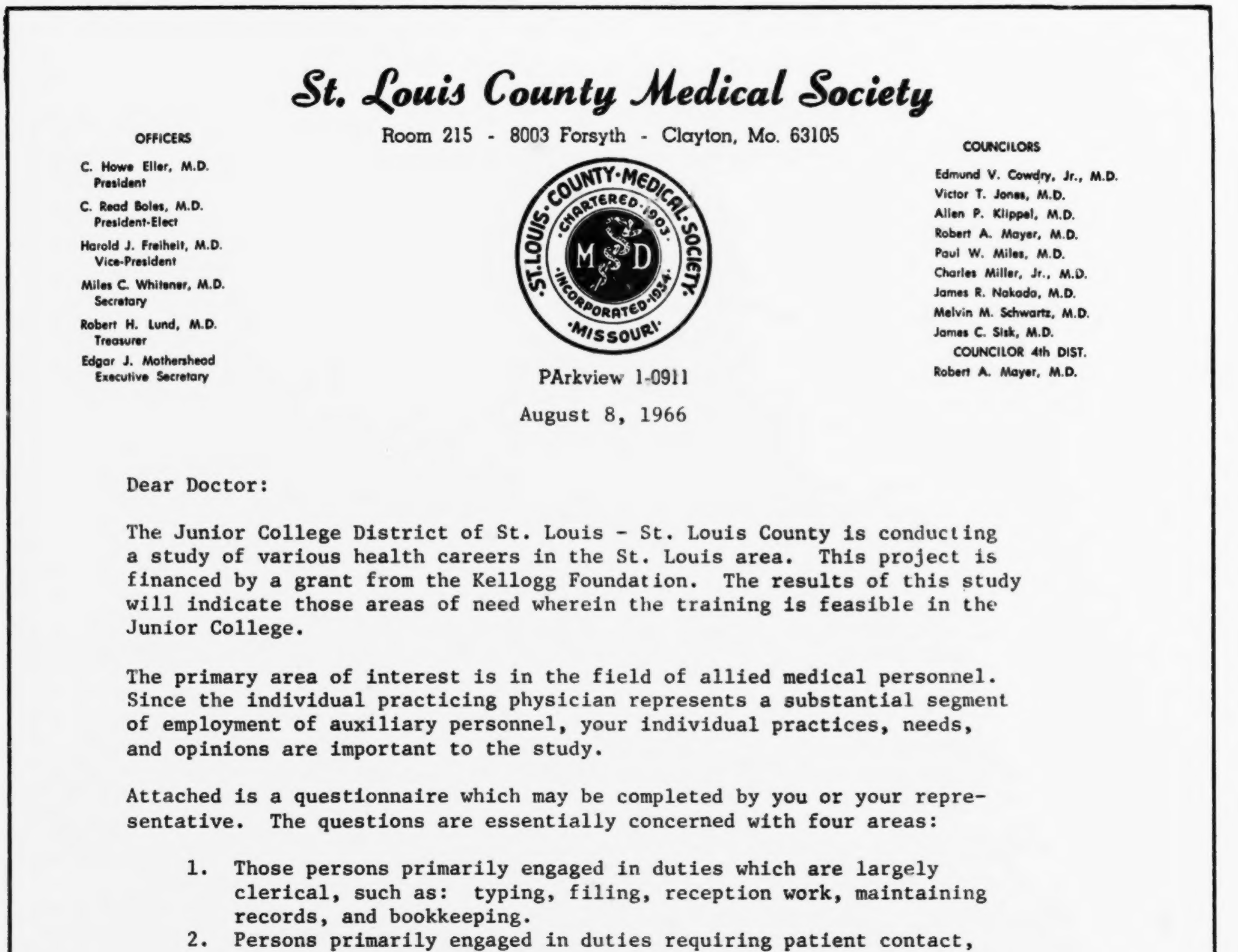
____

6. Comments: ____

____

____.

Optometric Questionnaire



St. Louis County Medical Society

Room 215 - 8003 Forsyth - Clayton, Mo. 63105

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PArkview 1-0911

August 8, 1966

Dear Doctor:

The Junior College District of St. Louis - St. Louis County is conducting a study of various health careers in the St. Louis area. This project is financed by a grant from the Kellogg Foundation. The results of this study will indicate those areas of need wherein the training is feasible in the Junior College.

The primary area of interest is in the field of allied medical personnel. Since the individual practicing physician represents a substantial segment of employment of auxiliary personnel, your individual practices, needs, and opinions are important to the study.

Attached is a questionnaire which may be completed by you or your representative. The questions are essentially concerned with four areas:

1. Those persons primarily engaged in duties which are largely clerical, such as: typing, filing, reception work, maintaining records, and bookkeeping.
2. Persons primarily engaged in duties requiring patient contact, such as: preparing patient for examination, directly assisting the physician with medical procedures, giving medications, collecting specimens for laboratory examinations, minor or routine clinical laboratory tests, and doing special tests such as E.K.G.
3. Persons who perform a combination of duties embracing tasks from both 1 and 2.
4. Persons particularly trained as Laboratory Technicians or X-Ray Technicians and are principally occupied with these duties.

In order to facilitate tabulation, your return will be directly to the Allied Medical Development Project. The Medical Society will be given the results of the questionnaire. A return envelope is enclosed for your convenience.

Since you are one of 128 selected physicians, your cooperation is extremely important and appreciated. Your Medical Society encourages your reply.

Sincerely,

C. Howe Eller

C. Howe Eller, M.D.
President

Physician's Cover Letter

NOTE: The individual questionnaires are confidential. The answers are in no way identified with the respondent.

I. TYPE OF PRACTICE

A. Solo or group practice. Please check one:

Solo Practice____
Group Practice____

B. If group practice, please indicate the number of physicians participating: Number of Physicians____

C. If group practice, and more than one of the physicians in your office have received this questionnaire, please place a check in the space provided and return only one questionnaire. Check here____

D. Please indicate which of the following specialties are practiced in your office (whether solo or group) by placing the number of physicians engaged in a particular specialty in the space preceeding the name of the specialty.

____Dermatology
____General Practice
____Internal Medicine
____Neuro Psych.
____OB-Gyn
____Ophthalmology
____Otolaryngology
____Pediatrics
____Surgery (general)
____Surgery (special)
____Urology
____Other

II. EMPLOYMENT OF AUXILIARY PERSONNEL

A. How many auxiliary personnel are employed in your office? ____

B. How many of the auxiliary personnel are engaged primarily in office-clerical tasks? ____

C. How many of the auxiliary personnel are engaged primarily in nursing activities? ____

1. How many of these are registered nurses? ____
2. How many of these are licensed practical nurses? ____
3. How many of these are neither R.N.'s nor L.P.N.'s? ____

D. How many are engaged in a combination of office-clerical and nursing tasks? ____

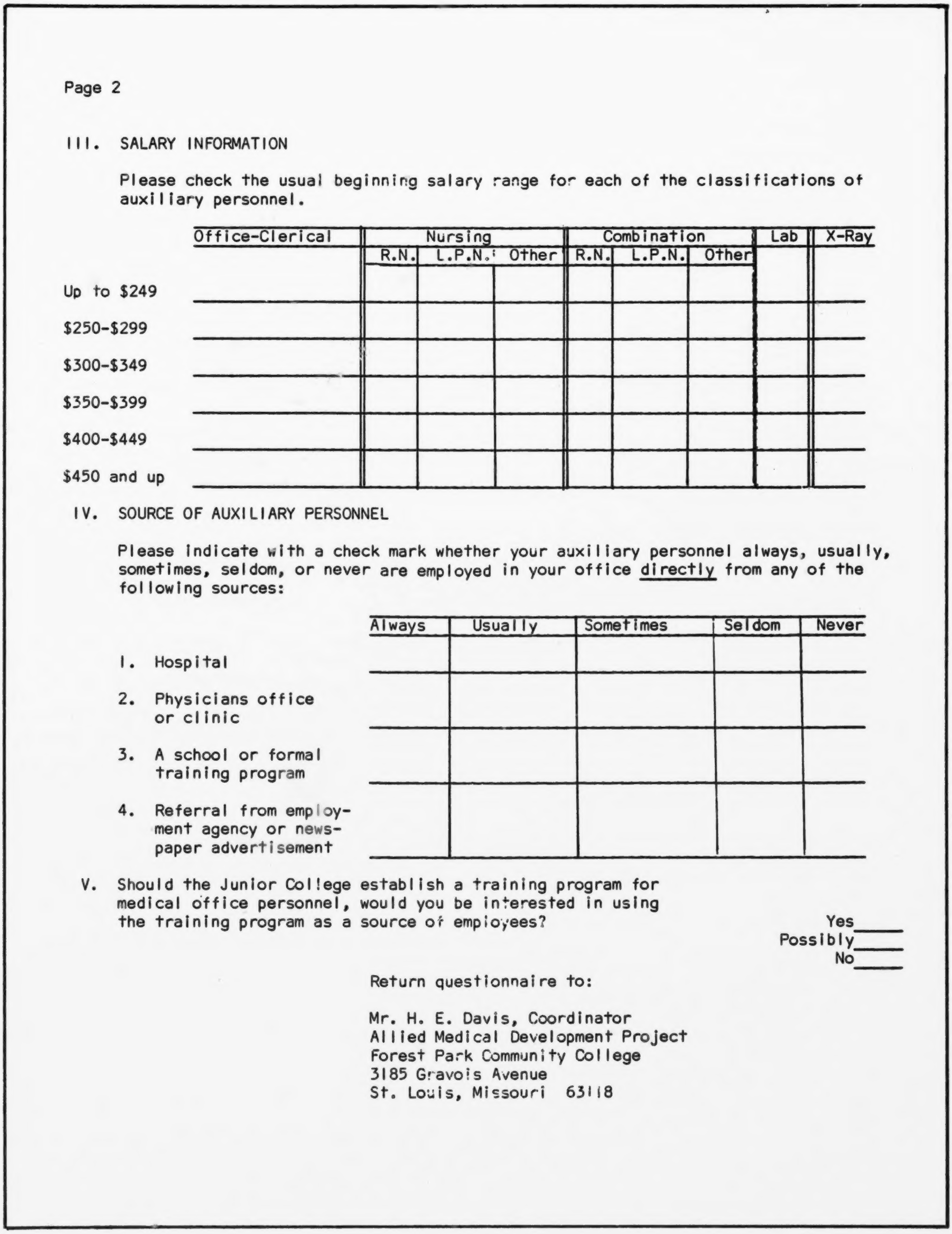
1. How many of these are registered nurses? ____
2. How many of these are licensed practical nurses? ____
3. How many of these are neither R.N.'s nor L.P.N.'s? ____

E. How many of your auxiliary personnel are specialized technicians?

1. Lab Technicians ____
2. X-Ray Technicians ____

F. How many of your auxiliary personnel cannot be classified above? ____

Physician's Questionnaire



Page 2

III. SALARY INFORMATION

Please check the usual beginning salary range for each of the classifications of auxiliary personnel.

	Office-Clerical	Nursing			Combination			Lab	X-Ray
		R.N.	L.P.N.	Other	R.N.	L.P.N.	Other		
Up to $249									
$250-$299									
$300-$349									
$350-$399									
$400-$449									
$450 and up									

IV. SOURCE OF AUXILIARY PERSONNEL

Please indicate with a check mark whether your auxiliary personnel always, usually, sometimes, seldom, or never are employed in your office directly from any of the following sources:

	Always	Usually	Sometimes	Seldom	Never
1. Hospital					
2. Physicians office or clinic					
3. A school or formal training program					
4. Referral from employment agency or newspaper advertisement					

V. Should the Junior College establish a training program for medical office personnel, would you be interested in using the training program as a source of employees?

Yes_____
Possibly_____
No_____

Return questionnaire to:

Mr. H. E. Davis, Coordinator
Allied Medical Development Project
Forest Park Community College
3185 Gravois Avenue
St. Louis, Missouri 63118

Physician's Questionnaire

AN APPROACH TO CORE CURRICULUM FOR THE ALLIED MEDICAL CAREER PROGRAMS

The core curriculum is probably the most talked about and least demonstrated concept in Allied Medical Careers. The lack of practical demonstration is not difficult to understand if one examines the goals and problems of implementing this concept.

Goals

1. To provide teaching efficiency and economy by structuring a foundation of courses having application to a broad spectrum of careers.
2. To provide uncommitted students with an educational experience which will assist in their choice of career and be applicable to that career.
3. As in 2, to allow lateral movement from one career choice to another with minimal loss of time and credit, as well as vertical movement.
4. To provide a greater integration of the Allied Medical student with the total student body of the college.

Undoubtedly there are numbers of other desirable goals which might be mentioned in connection with core curriculum.

In order to make progress toward the practical application of this concept, the restrictive problems must be identified and solved or avoided. Some of the problems are:

1. The broad spectrum of knowledge included in the various Allied Medical Careers.
2. These careers did not evolve as a group, but in isolated programs scattered in time and space, therefore, the traditional approach does not lend itself to core patterns.
3. The existence of a host of accrediting and regulatory agencies many of which outline rather stringent training patterns.
4. The lack of total credit hours in which to include general education, core and specific career curricula. The four year programs lend themselves more readily to a common core than the two-year Associate Degree programs. The one-year or less "certificate" curricula are completely inflexible.

As in the list of goals, other restrictive problems could probably be identified. The foregoing are the most apparent, and solutions to these would result in a long step toward the structuring of a practical core of study.

The presentation of a list of problems without the presentation of at least a suggested solution serves little purpose. A further discussion of each problem and possible solution is here presented with the admonition that these solutions are untried, unproven and are intended only as a base for further work.

Problem One

There is a widespread concept (perhaps, misconception) that all the Allied Medical Careers find their base in the Natural Sciences. An examination of the knowledge requirements of the individual careers reveals that this is literally not true. In fact, these individual careers share increments of knowledge from various disciplines but fall primarily into three areas:

1. Natural Science (Life Science): Direct medical contact careers such as Nursing, Medical Technology, Inhalation Therapy, Operating Room Technician are based primarily in this area of study.
2. Business Education: Non-medical contact careers such as Admissions Clerk, Unit Managers, Medical Record Technician draw heavily from this area of study.
3. Social Sciences: Additional non-medical contact careers such as Medical Case Workers, Occupational Therapy Aides, Directors of Volunteers find their foundation in this discipline.

Problem Two

Requires a fresh look at the inclusion of courses to fulfill an objective. The resulting curriculum may or may not follow the traditional approach.

Problem Three

Is closely related to Problem Two. The development of a core curriculum may require waivers from the accrediting agency to permit demonstration of the curriculum without penalty to the student.

Problem Four

May be avoided if the attempt to have curricula transfer, as well as provide two-year career training, is abandoned. There are few cases where a curriculum can serve both transfer and career objectives well.

If we recognize that there may be three different cores within the broad spectrum of Allied Medical Careers, we may then be in position to suggest core curricula which would apply to groups of career areas.

The following suggestion is for a science based core and is presented only as an initial approach. The concept obviously needs refinement to accomplish the desired goal. The courses selected are somewhat traditional; the presentation is designed to fit the general education requirements of a particular college.

The following courses without exception should prove useful:

Course	Credits
Anatomy & Physiology I and II	6
Mathematics	3
Orientation	2
Medical Terminology	2
General Science	4
	17

This overlaps the General Education requirement for Natural Science (6 hours). Additional General Education requirements are: Humanities - 6 hours; Social Science - 6 hours. The Health Core plus the remaining General Education and Physical Education (2 hours) would total 31 credit hours.

The course in Anatomy & Physiology would follow the present lecture structure. Very possibly the Anatomy & Physiology II could involve some specialized reading or laboratory work in one field or another, i.e. Oral Anatomy for Dental Hygiene. It is possible that the credit hours could be reduced.

The mathematics course could be specified according to the individual student's capabilities, with College Algebra as the upper limit. In actual practice these students need a good arithmetic course: fractions, decimals, conversion, proportions and slide rule.

Orientation would be directed towards a general exposure to the medical and hospital organization; the various career areas, their relationship to the doctor, patient and each other. The course might also cover ethics and observation techniques.

Medical Terminology is designed to further the students' communication ability in this specialized language.

General Science should be constructed to strengthen the students' knowledge in the fundamentals of biology, chemistry and physics.

Ideally these 31 hours of General Education and Health Core would form the first year of work. However, this would require somewhat major overhaul of the various curricula for practical achievement. The number of specific career courses scheduled in current curricula are:

	Career	Combined Core		Total
Clinical Laboratory Technology	33	+31	=	64
Dental Hygiene	40*	+31	=	71
Radiologic Technology	37	+31	=	68

*This is an approved 70 hour course.

The difficulty is not in the total number of credit hours involved; the problem lies in scheduling the career courses in the second year, maintaining the proper sequence. Since the core is designed to avoid early commitment to a particular career, the later the career courses are scheduled, the greater achievement of this objective. Clinical Laboratory Technology was constructed without outside direction from an accrediting body, therefore, the problem is less complex.

LIAISON AND COOPERATION WITH LOCAL AND NATIONAL ORGANIZATIONS

The health services industry is represented by a complex system of organizations concerned with accreditation, registry, training, financing, and other factors relating to workers in this industry. Lack of cooperation with these groups could seriously handicap the development of training programs.

Much of the communication with organizations at the national level had to be accomplished through correspondence. However, many contacts, particularly with local organizations, have been made in person by members of the Project staff.

Relationships with some of these organizations were established and maintained by:

1. The Director serving as a member of the American Association of Junior Colleges - National Health Council Joint Committee. The objectives of this committee are:
    A. To promote relationships between educators and health practitioners;
    B. Develop and distribute guidelines to assist in the establishment of training programs in health careers, and
    C. To stimulate interest nationally in these objectives.

The membership of this committee represents:

   1. The American Medical Association Council on Medical Education.
   2. American Society of Clinical Pathologists (Medical Technology).
   3. U. S. Office of Education.
   4. U. S. Public Health Service.
   5. American Nurses Association.
   6. Cuyahoga County Junior College in Cleveland.
   7. St. Mary's Junior College in Minneapolis.
   8. Allied Medical Development Project, St. Louis.
   9. National Health Council.
   10. American Association of Junior Colleges.
   11. Community College Health Careers Project, New York.

2. The Director serving as a member of the National Council on Medical Technology Education - American Association of Junior Colleges Joint Committee.

3. The Director served as a resource person at the National Workshop for State Health Career Councils, St. Louis, March 28, 29, and 30, 1966.

4. The Director served as a member of the subcommittee of the St. Louis Health and Welfare Council, to study recruitment of persons to health careers.

In addition to the foregoing, meetings of the following organizations were attended and the Project objectives explained:

1. Health Committee of the Missouri Association for Social Welfare.
2. Practical Nurse Education Council of St. Louis.
3. Greater St. Louis Dental Society.
4. South Side Dental Association.
5. West Side Dental Association.
6. Missouri Council for Health Careers.
7. International Society of Clinical Laboratory Technicians.
8. Executive Council, St. Louis County Medical Society.

Discussion meetings have been conducted with representatives of the Health, Education and Welfare Department of the United States and representatives of health career study projects from Arizona, Illinois, Iowa, Florida and New York.

Through correspondence and/or personal visit, when possible, agencies responsible for accreditation or registration of each field of study have been contacted by various members of the Project.

SURVEY OF STUDENTS IN ALLIED MEDICAL PROGRAMS

Near the end of the initial year of operation, a simple questionnaire was circulated to the students enrolled in the allied medical programs. This survey was designed to determine student reaction to the new curricula.

Since the questionnaire requested opinions based on their experience, a variety of answers was received. The following tables present the majority opinion expressed in answer to each section:

Dental Assisting

35% response

1. Curriculum:
   Length: About right
   Courses: Adequate
   A variety of suggestions for change. Predominate suggestion was more clinic experience.
2. Clinic Experience:
   Too short
3. Reason for selecting program:
   Most influence evidently came from parents.
4. Registry identification:
   All students completing the questionnaire identified the American Dental Association.
5. Most attractive part of program:
   Primarily, clinical practice.
6. Least attractive part of program:
   No majority answer.

Radiologic Technology

100% response

1. Curriculum:
   Length: About right
   Courses: Adequate
   Major suggestion for change indicated desire for a more specialized anatomy course.
2. Clinical Experience:
   Too short
   (Note: At this point students had served a minor portion of the required clinical experience.)

3. Reason for selecting program:
   Most influence came from hospital x-ray department personnel.
4. Registry identification:
   While a majority knew registration existed, they were not able to correctly identify the registry.
5. Most attractive part of program:
   Majority named clinical experience.
6. Least attractive part of program:
   Majority named anatomy laboratory.

Medical Office Assisting

100% response

1. Curriculum:
   Length: About right
   Courses: All suggested change
   All suggested greater emphasis on medically related courses with reductions in business and clerical.
2. Clinical Experience:
   Majority felt the scheduled amount was adequate.
3. Selection of Program:
   Length of program (one year) appeared to have most influence.
4. Registry identification:
   While a majority knew a registry existed, they could not correctly identify the organization.
5. Most attractive part of program:
   Clinical experience.
6. Least attractive part of program:
   Accounting.

Dental Hygiene

80% response

1. Curriculum:
   Length: About right
   Courses: 50% felt courses were adequate
   Majority of those suggesting change desired additional instruction in anatomy.
2. Clinical Experience:
   Too short
   (Note: At this time clinical practice had not started.)
3. Selection of Program:
   Major influence obviously came from dentists.
   (Note: 90% of this initial class had worked as Dental Assistants.)
4. Registration identification:
   The majority were able to correctly identify the registry.
5. Most attractive part of program:
   Clinical Practice.
   (Note: See notation under 2 — Clinical Experience.)
6. Least attractive part of program:
   Basic Techniques Laboratory.
   (The high percentage of class members with work experience in the dental office may have influenced this answer.)

CLINIC AFFILIATION

For many of the programs in allied medical careers, affiliation with an operating laboratory or clinic becomes a necessity. Such clinic affiliation has been established for Dental Assisting, Radiologic Technology, Medical Office Assisting and is being established for Clinical Laboratory Technology.

For Dental Assisting and Medical Office Assisting, affiliations were established with offices of private practitioners of dentistry and medicine. In each case a similar method was followed.

With the assistance of the respective advisory committee, a list of potential affiliating offices was compiled. Letters expressing the intent of the program and the mechanics of the affiliation were directed to each practitioner. Those responding with interest were contacted for personal interview to further explain the objectives of the affiliation. Through this method all students were placed in private offices at no compensation for the required period of time. The arrangement was completely informal, requiring no written agreement.

For Radiologic Technology and Clinical Laboratory Technology a more extended period of clinical affiliation is required. Operating laboratories having a sufficient volume of work to be eligible for approval by the respective accrediting body were sought for these programs. Since laboratories demonstrating this volume of work were invariably part of a hospital, a more complex administrative structure was involved than occurs in the physician's and dentist's office.

To determine which hospital x-ray departments were interested in affiliation with the program, letters were directed to each of the eleven local hospitals approved to train Radiologic Technology students. The letter briefly explained the program, asked whether or not the clinic was interested in affiliation and inquired the maximum number of students the clinic could accept.

The x-ray departments answering affirmatively were contacted and the details of affiliation were discussed.

Affiliation was arranged with two leading hospital x-ray departments. An informal written agreement was arranged with each hospital. (Appendix F.) Although the initial two years of affiliation are accomplished at no cost to the college, it is apparent that compensation by the college for use of the facilities will be desired in the future. It is recommended that this cost be determined by utilizing a student-hour base, rather than a fixed fee. In this manner the total cost can be easily computed, and the fluctuation of students and hours from semester to semester can be recognized.

At this time a similar method is being utilized to determine affiliated clinics for the program in Clinical Laboratory Technology.

SPECIALIZED ON-CAMPUS FACILITIES

In addition to the off-campus clinical affiliation, it is necessary to establish rather extensive laboratory and clinical facilities on-campus unless this type of equipment is conveniently available for use by the college.

Equipment for the programs in Radiologic Technology and Clinical Laboratory Technology indicate optimum equipment for programs which have access also to well equipped operating clinical laboratories.

Due to relatively rapid technological changes in dental equipment during the last five years, an extended period of equipment evaluation was conducted. In addition, the equipment for the dental hygiene clinic reflects the absence of any other suitable clinic available for the students' use. In our opinion, the equipment described in these areas embrace the most advanced concepts available.

Dental Assisting - Dental Hygiene

(Note: All facilities are required for Dental Hygiene. Those facilities which could be eliminated if Dental Hygiene were not included are indicated by (*).

Demonstration Operatory - 24 ft. x 15 ft.

Set up as a fully equipped, operating dental office. Amphitheatre area to accommodate twenty-five students.

Equipment:

1 dental console equipped with 1 high speed handpiece and 1 low speed handpiece, and high-volume evacuator.

1 x-ray film viewer.

1 Autoclave.

2 operating stools.

1 mobile cabinet.

1 instrument sharpener.

2 cold sterilizers.

1 spot welder.

1 cavitron type unit.

1 ultrasonic instrument cleaner (uses high frequency sound waves to clean instruments).

1 Amalgamator Trituator.

1 x-ray unit.

Assorted dental instruments.

Stainless steel cabinet sink with work top, instrument storage.

Closed circuit T.V. with two monitors, close-up lens and video tape recorder.

Darkroom - 7 ft. x 12 ft.

Operating film developing room with light-tight door.

Equipment:

Counter top cabinets on 14 ft. wall.

Developer racks.

1 timer.

Film safe lights.

Hot, cold and chilled water supply (refrigerated) with automatic temperature control valve.

Signal system so that the door will not be opened during the film developing process.

5-15-5 insulated developing tank.

Film drier.

X-Ray Rooms - Two lead lined rooms, each 7 ft. x 12 ft.

Equipment - (Each room):

Wall-mounted dental x-ray unit.

Manual operating chair.

1 film dispenser.

1 view box.

Contracted film badge service to monitor radiation received by persons using the rooms.

Storage Room - 10 ft. x 15 ft.

Room is equipped with steel shelving for storage of supplies used in dental clinics.

Hydro-pneumatic tank and pump to maintain constant water pressure.

Patient Education - Conference Room - 10 ft. x 15 ft.

Equipped with seating for groups of 10 to 12 persons. Used for lectures to patients on preventive oral hygiene. Room also equipped with chalkboard, projection screen and bulletin board.

Patient Reception Area - 17 ft. x 24 ft.

Equipped with lounge type seating for 20 patients; clinic control and appointment desk; files for active records.

Dental Hygiene Clinic - 30 ft. x 66 ft.

Could be eliminated if Dental Hygiene were not included.

Main clinic area designed for Dental Hygiene students to administer oral prophylaxis to patients. The clinic is equipped with twenty dental hygiene treatment units. Each unit contains the following equipment:

1 power lounge type dental chair fitted for chair mounted operating light.

1 cabinet type stainless steel sink with extended work top. Cabinet has towel-drop door and storage shelf.

1 x-ray view box.

1 operating stool.

1 dental operating light.

*1 portable dental hygiene unit.

1 cold sterilizer.

Centrally located within the clinic is the following equipment:

2 dental autoclaves.

1 ultrasonic instrument cleaner.

2 instrument sharpeners.

3 portable cavitron type prophylactic units.

2 oxygen emergency kits.

Cabinet work with sinks for central clean-up and supply storage.

Dental Techniques Laboratory - 44 ft. x 31 ft.

Utilized for the instruction of Dental Assistant's in model and prosthesis work. Used for pre-clinic instruction in Dental Hygiene. This is a basic laboratory for any dental auxiliary program.

Cabinet work on walls containing sinks, casting wells, centrifugal casters, investing, burnout ovens, washout equipment, plaster bins, investing equipment and storage.

4 work tables (32 positions). One bench equipped with 4 Baldor lathes and vacuum dust collectors.

2 spot welders.

16 portable belt-driven dental engines with handpieces.

22 articulated dental manikins with head-pieces; equipped for bench mounting.

1 vacuum investor.

2 compound heaters.

4 vibrators.

32 adjustable laboratory stools with back rest.

2 model trimmers.

Gas, air and electrical outlets at each station.

Bunsen burners.

Locker Room - 419 sq. ft.

Area provided for students to change into uniforms and store books and street clothing.

Forest Park Portable Dental Hygiene Unit

An extended period of equipment evaluation was accomplished prior to the final selection of equipment for the Dental Hygiene clinic.

Existing products of major dental equipment manufacturers were evaluated for use in the hygiene clinic. In most instances this equipment was set up and operated in the clinic. From this procedure a number of concepts were formed:

1. Chair

   While most dental chairs proved satisfactory, it was decided the selected chair would have the following features:

   A. Power operated lounge type adaptable for sit-down dentistry.

   B. Individual controls and operation of elevation, tilt and back positions. Controls must be accessible from either side of chair with tilt and back controls on sides of chair back.

   C. Arms providing patient comfort in all positions; also permitting ease of entry and exit.

---

*This unit developed specifically for this program. Detailed description follows this equipment list.

D. Back of chair engineered to allow use of either prosthetic or horseshoe pillow headrest.

E. Chair must allow operator easy access to patient from any position. The back of the chair to be slim design with no projections to interfere with operator.

F. Chair must have mount for operating light.

2. Unit

A number of fixed and portable units were evaluated. While none of the existing units were judged satisfactory, it must be pointed out that this judgment was based on the college's specialized requirements, rather than the construction or operation of any unit.

In order to satisfy these requirements an existing portable unit was rather extensively modified to meet the following general specifications:

A. Unit must be compact and lightweight with air, electricity, water and drain supplied through a flexible umbilical cord.

B. Unit must be completely usable from left or right hand operating position.

C. Unit must have single control for electrically powered handpiece, air powered handpiece or cavitron unit with suitable switches for this selection.

D. Unit to have storage drawers and top must be suitable for instrument layout.

E. Unit must have quick-disconnects for air, water and electrical supply to facilitate transfer or replacement of any unit at any station.

Utilizing the above specifications, the portable unit shown in Figure 1 was developed.

The cabinet is of press-board construction and non-glare, formica type covering available in a variety of colors. The unit is mounted on casters and has the following dimensions: Height 27", width 13", length 18".

The following refers to Figure 1:

A. Air-actuated unit control.

B. Seven foot umbilical cord containing air, water, electrical and drain supply with quick disconnects at utility source on clinic floor.

C. Air-powered saliva ejector.

D. Extra hanger for future hand-held cuspidor if needed; or additional handpiece.

E. Air-powered high-volume evacuator.

F. Low speed, high torque electric or air powered handpiece motor. (Interchangeable with no modification.)

G. Three-way syringe. (Air, water or spray.)

H. Controls for water, saliva ejector and high volume evacuator.

I. Air pressure gauge.

J. Selector switches for air-powered handpiece, electrically powered handpiece and cavitron unit.

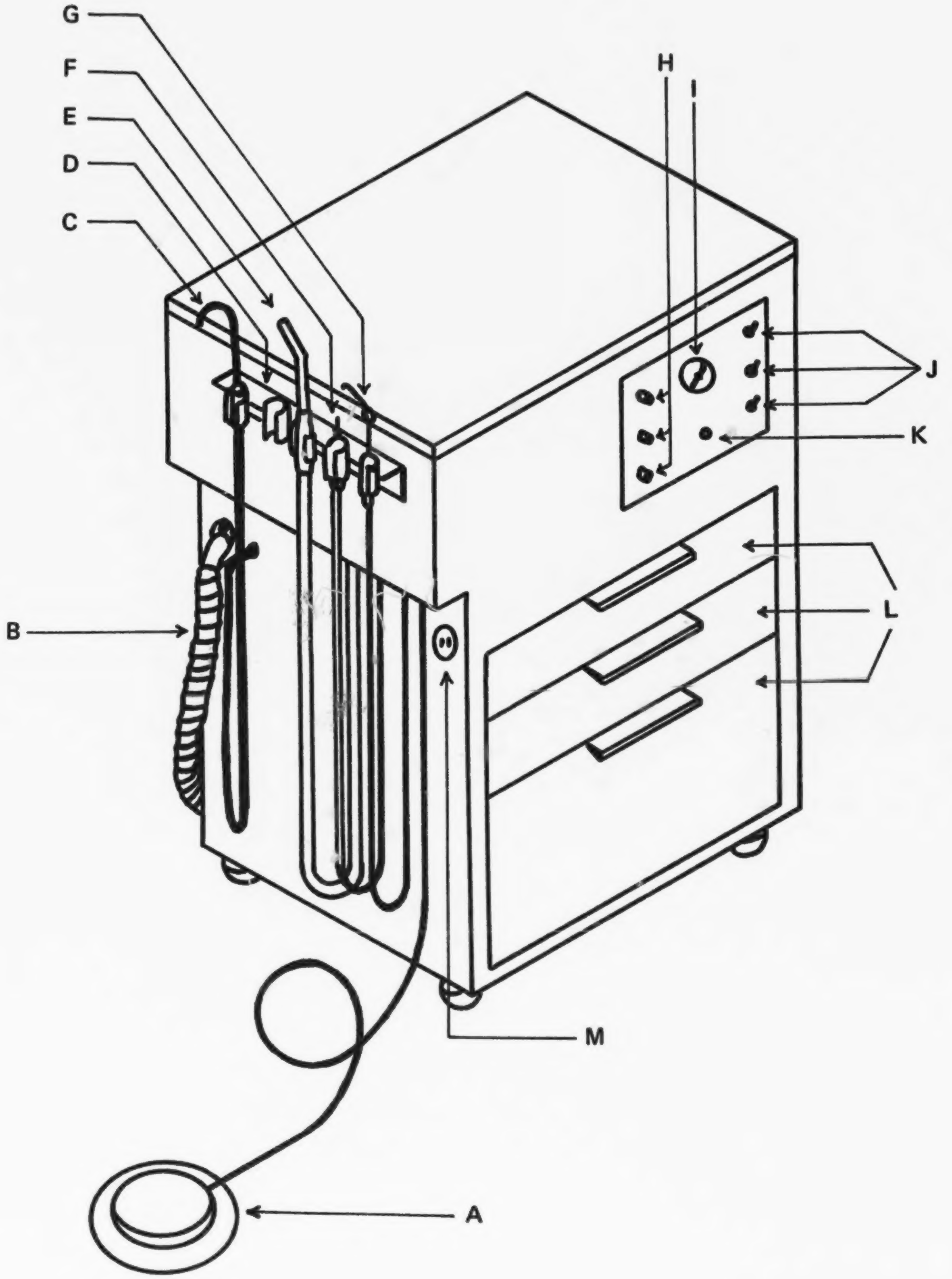
K. Quick-disconnect water outlet for cup filler or cavitron unit.

L. Drawers for supplies.

M. Electrical outlet for auxiliary equipment.

Top is removable for easy access to internal hardware, service and adjustments. The cost of this unit was 25% to 50% lower than other units evaluated.

FOREST PARK PORTABLE DENTAL HYGIENE UNIT


G
F
E
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B
M
A

Figure 1

Radiologic Technology Laboratory - 22 ft. x 31 ft.

This room is utilized to provide orientation and positioning instruction for the students. The x-ray equipment in this room is non-functional only in that it cannot generate x-rays; all associated functions are duplicated.

The following equipment is provided:

1—90° tilt table, motor driven.
1—Counter-poise ceiling tube mount.
1—300 M.A., 150 K.V. push-button type generator (control panel) (has high-tension transformer).
1—Tube housing complete.
2—Four bank illuminators mounted on mobile stand.
1—Lead apron.
1—Pair lead gloves.
1—Set of positioning blocks; assorted sizes.
1—Pelvimeter.
1—Angle liner.
1—Three drawer film file cabinet.
3—Sets assorted film blockers.
1—Marker set.
6—Film hangers, assorted sizes.
1—Set Projecto aids - x-ray positioning.
1—Set Projecto aids - atomics.
1—Set Projecto aids - electricity.
1—Set Projecto aids - x-ray physics.
25—Tablet arm chairs.

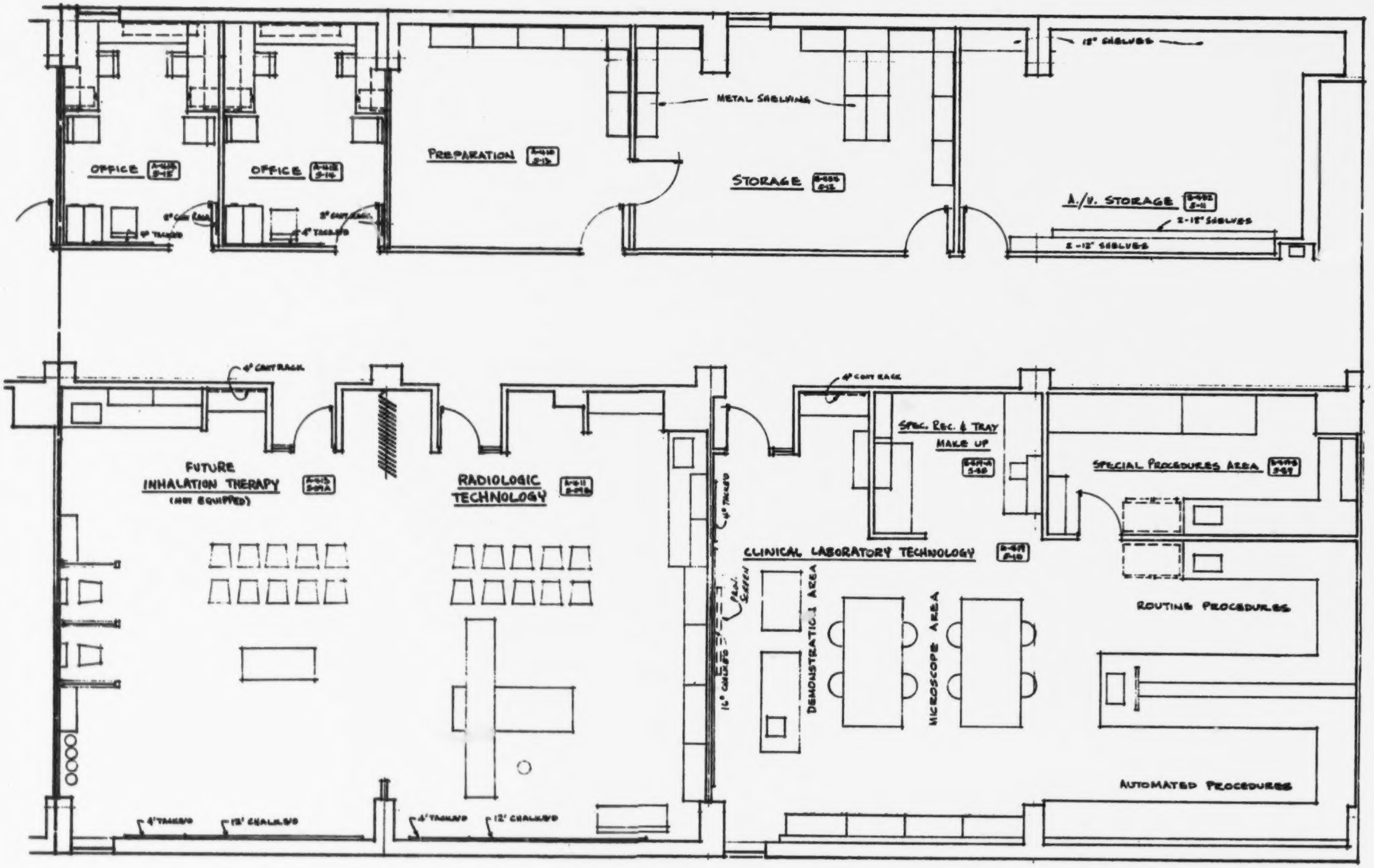
Clinical Laboratory Technology - 44 ft. x 30 ft.

This space is designed as a laboratory for the training of students in the career courses. The room is divided into areas for microscope work, routine procedures, automated and special procedures. This room can also be used as a standard Biology laboratory.

The room will contain the following equipment:

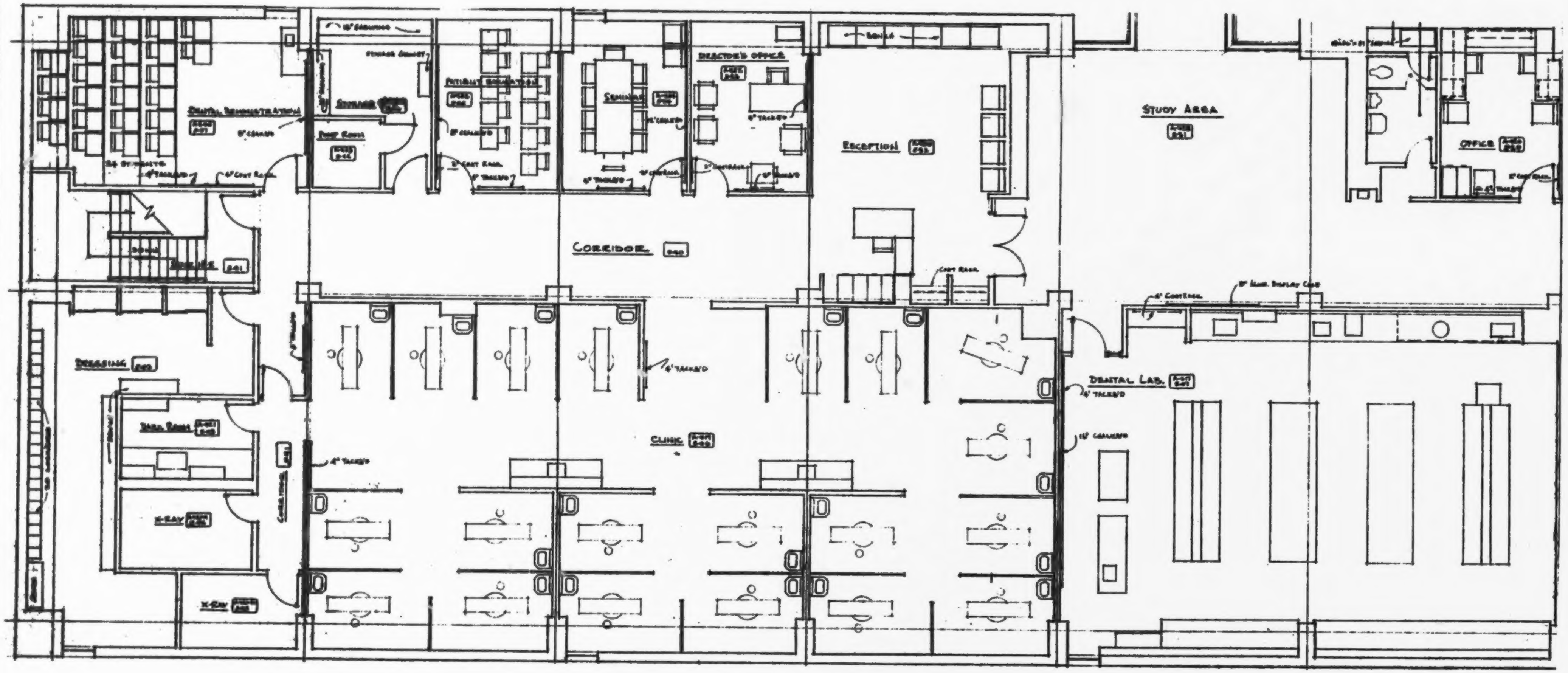
1—Auto-Cytometer.
1—Auto-Diluter.
1—Fibrometer.
3—Spectrophotometers.
1—Flame photometer.
1—Autoclave.
3—Centrifuges.
1—Microhematocrit Centrifuge.
1—Microhematocrit Reader.
1—Analytical Balance.
1—Triple beam balance.
1—PH meter.
1—Voltage regulator.
16—Hemacytometers.
1—Van Slyke blood gas apparatus.
1—Natelson microgasometer.
1—Refrigerator.
1—Incubator.
7—Interval timers.
2—Rotators for VDRL.
3—Water baths.
16—Counters, simple desk.
16—Manual differential blood counters.
2—Pipette washers.
1—Basal Metabolism rate machine.
12—Microscopes, student, binocular.
1—Auto analyzer (2-channel; no flame).
1—Corning blood PH Meter.
1—Complete standard paper Electrophoresis Apparatus.

Biology type laboratory benches for 24 students with appropriate stools. Casework to accommodate a Biological Laboratory.



OFFICE
OFFICE
PREPARATION
STORAGE
METAL SHELVING
A./V. STORAGE
18" SHELVES
2-18" SHELVES
2-12" SHELVES
4' TACKBD
FUTURE
INHALATION THERAPY
(NOT EQUIPPED)
RADIOLOGIC
TECHNOLOGY
4' TACKBD
12' CHALKBD
4' TACKBD
16' CHALKBD
PROJ. SCREEN
SPEC. REC. & TRAY
MAKE UP
SPECIAL PROCEDURES AREA
CLINICAL LABORATORY TECHNOLOGY
DEMONSTRATION AREA
MICROSCOPE AREA
ROUTINE PROCEDURES
AUTOMATED PROCEDURES

ALLIED MEDICAL FLOOR PLAN


Dental Demonstration
Storage
Patient Education
Seminar
Director's Office
Reception
Study Area
Office
Corridor 240
Stairs 241
Dressing
Dark Room
X-Ray
X-Ray
Corridor
Clinic
Dental Lab.
4' Tacked
11' Chalkbd

DENTAL PROGRAMS FLOOR PLAN

CURRICULA DEVELOPED AND IMPLEMENTED

September, 1967

APPENDICES A through F

CLINICAL LABORATORY TECHNOLOGY

ASSOCIATE DEGREE CURRICULUM

The Clinical Laboratory Technician, under the supervision of a Medical Technologist, performs qualitative and quantitative tests and related duties characteristic of the department of the laboratory in which he works. In some laboratories he is expected to be familiar with work performed in each department, in others there would be a tendency to specialize in one of the following departments: bacteriology, blood bank, chemistry, hematology, histology, serology and urinalysis. The degree of specialization will vary with the size of the laboratory, volume of specialized tests in any particular area, and the use of automated equipment in the laboratory.

All the local laboratories have ever present vacancies which are difficult to fill. These shortages extend country-wide and show no signs of improving. It is projected that within the next eight years the country will need a minimum of 50,000 more of this type of technician than is presently available. In the local market at the present time, a graduate of the proposed two-year curriculum could probably expect a minimum starting salary of $350 to $375 per month.

Physical facilities for training clinical laboratory technicians will require some equipment not usually found in the regular biological and chemical laboratories. Special equipment will probably include such instruments as an auto-analyzer, hematocrit apparatus, Coulter cell-counter and a spectrophotometer. Clinical affiliation with an operating laboratory would be both desirable and mandatory to allow the student instruction on additional equipment, to familiarize him with the actual operation of the clinical laboratory, and to allow exposure to abnormal and pathogenic specimens. Cost of special equipment will amount to considerably more than that found in the ordinary laboratory. This laboratory could probably be set up at a cost of $25,000. The equipment for the special courses would not be needed until the third semester. At that time, a Medical Technologist should be employed as a faculty member.

Thirty students can be accommodated in the laboratory and cooperating clinical facilities. The applicant should be in the upper two-thirds of his high school class and strongly motivated.

This program has been encouraged as a pilot curriculum by the Joint Committee of the National Council on Medical Technology Education—American Association of Junior Colleges.

CLINICAL LABORATORY TECHNOLOGY

CURRICULUM

Semester I	**Credits**
Communications I	3
Chemistry of Human Function	4
Introductory Biology	4
Technical Mathematics I	3
Physical Education	1
	15

Semester II	
Communications II	3
Human Anatomy and Physiology I	3
General Microbiology	4
American Civilization	3
Human Relations	3
Physical Education	1
	17

Semester III	
Bacteriology, Parasitology, Serology	4
Hematology	4
Fundamentals of Basal Metabolism and Electrocardiography	1
Orientation to the Medical Laboratory	1
Clinical Practice I	6
	16

Semester IV	
Clinical Chemistry	5
Blood Bank	3
Routine Analysis	3
Clinical Practice II	6
	17

Note: The third and fourth semesters of this program are designed to supply the student with extensive applied science training necessary to effectively function in the clinical laboratory.

The individual time allocated to each section of study follows the ratio recommended by the Board of Certified Laboratory Assistants. Although the actual clock hours in each area of study is lower than prescribed, it is felt that the science studies in Semesters I and II will allow this reduction. The time recommended by the Board of C.L.A. is intended for students not having the prerequisite year of college level training.

APPLIED SCIENCE COURSE DESCRIPTIONS

BACTERIOLOGY—PARASITOLOGY—SEROLOGY 4 credits

Prerequisite: General Microbiology.
Two lectures and two two-hour
laboratory periods each week.

A study and practice of the standard techniques involved in the collection and handling of specimens, preparing cultures, venipunctures, handling infectious specimens, VDRL tests, preparation of slides, use of disinfectants and sterilization techniques.

HEMATOLOGY 4 credits

Prerequisite: General Microbiology.
Two lectures and two two-hour
laboratory periods each week.

A study and practice of the standard tests and techniques involving blood: blood count, hemoglobin, smears, hematocrit, sedimentation rates. Methods of blood collection and the origin and relationship of blood cells will be taught.

FUNDAMENTALS OF BASAL METABOLISM AND ELECTROCARDIOGRAPHY 1 credit

Prerequisite: None.
One hour per week.

Lecture and demonstration of the purpose and use of BMR and EKG equipment. Normal tracings, calibration, using and trouble-shooting the equipment will be explained and demonstrated.

ORIENTATION TO THE MEDICAL LABORATORY 1 credit

Prerequisite: None
One hour per week.

A discussion of the pathology laboratory; the various sections and duties. The relationship of the technician to other personnel and the responsibility of the laboratory to the patient and medical staff will be presented.

CLINICAL CHEMISTRY 5 credits

Prerequisite: Chemistry of Human Function.
Two lectures and three two-hour
laboratory periods each week.

A course designed to train personnel in the performance of specific chemical tests involving creatinine, uric acid, glucose, amylase, protein and nitrogen. Proper procedure, use of standard solutions and equipment and sources of error will be stressed.

BLOOD BANK 3 credits

Prerequisite: Hematology.
Two lectures and one two-hour
laboratory period each week.

The course is designed to acquaint the student with the responsibility of blood bank work; the proper techniques used in processing blood donors, blood groups, RH factors, cross matching; blood processing, storage and issue. The preparation and importance of blood bank records will be taught.

ROUTINE ANALYSIS 3 credits

Prerequisite: Chemistry of Human Function.
Two lectures and one two-hour
laboratory period each week.

A course designed to train the student in the techniques of routine tests such as: urinalysis, urine microscopies, Sulkowitch test, PSP test, gastric analysis and occult blood. Sources of error and the normal composition of specimens will be stressed.

CLINICAL PRACTICE I 6 credits

Prerequisite: General Microbiology.
Sixteen hours clinical practice each week
in hospital or private laboratories.

Demonstration and supervised experience in affiliated pathology laboratories. Specific assignments in the laboratory are designed to further develop the techniques being studied.

CLINICAL PRACTICE II 6 credits

Prerequisite: Clinical Practice I.
Sixteen hours clinical practice each week
in hospital or private laboratories.

Continuation of Clinical Practice I.

CLINICAL LABORATORY TECHNOLOGY ADVISORY COMMITTEE

Robert C. Ahlvin, M.D.
Chief Pathologist
Cochran Veterans Administration Hospital

Henry C. Allen, M.D.
Director of Laboratories
Deaconess Hospital

R. W. Ogilvie, M.D.
Chief of Pathology
St. Luke's Hospital

Helen Sheppard, M.T. (ASCP)
Missouri Society of Medical Technologists

Sister Gertrude Fruchtl, S.S.M.
Assistant Professor and Chairman
Department of Medical Technology
St. Louis University

DENTAL ASSISTING

TWO SEMESTER—CERTIFICATE CURRICULUM

The modern Dental Assistant performs the functions of office manager, secretary, chairside assistant and laboratory aide.

Her office duties include scheduling appointments, keeping dental records, purchasing supplies, collecting accounts and maintaining the general appearance of the office.

As chairside assistant she sterilizes instruments, prepares patients for treatment, sets out instruments in order of use, passes instruments to the dentist, keeps the operating field clear, mixes fillings and assists in taking, developing and mounting x-rays.

In the dental laboratory the trained Dental Assistant may, over the years, learn to perform a broad range of techniques. She will often begin by preparing impression materials, carving inlay patterns, investing inlay restorations and preparing plaster casts. Her development in this area will depend upon her interests and skill and the local need for laboratory service.

As trained Dental Assistants are in very short supply in Metropolitan St. Louis and throughout the nation, the graduate will have little difficulty finding a good paying position in a pleasant office. She will work with professionals in an occupation which provides an important service to humanity and calls for integrity, education and skill.

The two-semester Dental Assistant program offered by the Junior College District provides lecture, laboratory and clinical instruction. It prepares the graduate for internship in practice and ultimately, for the American Dental Assistants Certification Examination. Courses are taught by the Junior College District faculty and guest lecturers in special fields. Clinical practice is provided in private dental offices and clinics cooperating with the program.

Although Dental Assisting exists as a program on another campus of the Junior College District, it was recommended for implementation at this campus for the following reasons:

1. Investigation reveals that the demand for this training exceeds the supply from one program.
2. It can be implemented as a partner to the Dental Hygiene Curriculum, utilizing the same faculty and facilities.
3. In many instances, it serves as a natural supplier of potential students to the Dental Hygiene Program.

Necessary facilities are a complete dental operatory, x-ray facilities and a dental techniques laboratory capable of handling a 32-student class.

DENTAL ASSISTING CURRICULUM

Semester I	**Credits**
Dental Science	3
Pre-Clinic	2
Dental Roentgenology I	2
Operative Procedures I	2
Dental Laboratory Procedures I	2
Communications	3
Elective	3
	17

Semester II	
Dental Science	2
Dental Roentgenology II	2
Operative Procedures II	2
Dental Laboratory Procedures II	2
Dental Secretarial	2
Clinical Practice	6
	16

Total minimum contact hours per year—1008 hours.

APPLIED SCIENCE COURSE DESCRIPTIONS

DENTAL SCIENCE I **3 credits**

Prerequisite: Enrolled in Dental Assisting.
Three lecture hours per week.

Students receive an introduction to selected areas of the dental sciences including dental anatomy and physiology and oral pathology.

DENTAL SCIENCE II **2 credits**

Prerequisite: Dental Science I.
Three lecture hours per week.

A continuation of Dental Science I including oral microbiology, pharmacology, and diet and nutrition.

DENTAL ROENTGENOLOGY I 2 credits

Prerequisite: Enrolled in Dental Assisting.
Three lecture hours per week.

Course of instruction on a sound and practical phase of safe radiographic procedures. Includes lectures on the development and effects of x-radiation, demonstrations on the technical procedures of making intra and extra-oral exposures. Instruction on film identification, processing and mounting. Clinical practice in placement and angulation of film. Guest lecturers.

DENTAL ROENTGENOLOGY II 2 credits

Prerequisite: Dental Roentgenology I.
Five hours clinical practice each week.

Advanced clinical practice in exposing films, processing and mounting. Close supervision so as to improve and refine the technical procedures. Evaluation of students' films with suggestions for improvement. Specific attention is given to the diagnostic worth of films taken.

OPERATIVE PROCEDURES I 2 credits

Prerequisite: Accepted in Dental Assisting.
Four lecture-demonstrations each week.

Students are introduced to the profession of dentistry, related areas of service in the profession, and future opportunities in these areas. The students learn to recognize the dental instruments, equipment, supplies and their relationship to dental procedures including oral surgery, orthodontics, prosthetics, pedodontics, endodontics, fixed dental prosthetics. Chairside assisting is stressed.

OPERATIVE PROCEDURES II 2 credits

Prerequisite: Operative Procedures I.
Three hours clinical practice each week.

Continuation of Operative Procedures I, giving advanced information and practice in various procedures. Each student is given situation problems as they would exist or arise in a private dental office. This enables students to gain as much practical experience as possible while still in school. Introduction to dental health education of patients.

DENTAL LABORATORY PROCEDURES I 2 credits

Prerequisite: Enrolled in Dental Assisting.
Six hours lecture/laboratory each week.

Students learn to reproduce tooth forms by scale drawings and wax carvings. The use of the Boley gauge. It also teaches the pouring of plaster and stone casts, the preparation of custom impression trays, baseplates and rims. It also includes the use of dental laboratory equipment, the preparation of impression materials, the storage of laboratory supplies.

DENTAL LABORATORY PROCEDURES II 2 credits

Prerequisite: Dental Laboratory Procedure I.
Two three-hour laboratory periods each week.

Continuation of Dental Laboratory Procedures I, giving advanced information and practice in various procedures.

PRE-CLINIC PRACTICE 2 credits

Prerequisite: Enrolled in Dental Assisting.
Three hours lecture and/or laboratory per week.

This course deals primarily with the care and manipulation of all equipment, instruments, and supplies. It is intended to better acquaint the student with equipment and thus increase the speed and accuracy in using these materials before they are sent to actual clinic assignments.

DENTAL SECRETARIAL PROCEDURES 2 credits

Prerequisite: English 40.101, Accounting 20.054.
Two lecture and laboratory periods each week.

This course covers general office management, record keeping, appointment scheduling, telephone techniques, collection of accounts, communication, recall system, laws governing the dental profession.

CLINICAL PRACTICE 6 credits

Prerequisite: Completion of first semester
Dental Assisting and concurrent with
Operative Procedures II.
Twelve hours clinical practice each week
in private dental offices, clinics and
dental school.

Assignment to duty at participating dentists' offices and Washington University School of Dentistry. Actual experience gained entire semester.

DENTAL HYGIENE

ASSOCIATE DEGREE CURRICULUM

Primarily the Dental Hygienist's work is dental prophylaxis, which is the scaling and the polishing of the teeth. The Dental Hygienist is also trained in dental health education, including the importance of good home care, diet and nutrition. In addition to the dental hygiene duties, which are performed alone, the hygienist may sometimes serve as a chairside assistant to the dentist, handing him instruments and preparing dental materials for his use.

Licensing of Dental Hygienists is mandatory, the minimum length of training is two years.

In the Spring of 1966, the Allied Medical Development Project conducted a survey of virtually 100% of the dental practices in the Metropolitan St. Louis area. The following concepts are a result of the 30% response:

1. Only 5% of the area dentists have the services of a full-time hygienist, usually earning in excess of $500 per month.
2. In general, more recent graduates of dental schools are more likely to desire the services of a hygienist.
3. An immediate need of 150-200 dental hygienists is visualized.

Literature research reveals that Kansas City has three times as many hygienists per dentist as St. Louis. Kansas City has a school of dental hygiene.

Educational practices newly employed in the schools of dentistry will tend to increase the probability of the dentist using auxiliary personnel.

Applicants must be good students, strongly motivated, having good manual dexterity. Personal cleanliness and good health are essential characteristics.

DENTAL HYGIENE CURRICULUM

Semester I	**Credits**
Communications	3
Chemistry of Human Function	4
Human Anatomy & Physiology I	3
Oral and Dental Anatomy	4
Nutrition	2
	16
Semester II	
Public Speaking	3
Human Anatomy & Physiology II	3
Dental Hygiene & Prophylaxis	4
Dental Roentgenology	2
Microanatomy (Histology)	3
Orientation to Dentistry I	1
	16
Summer Session	
Clinical Dental Hygiene I	4
Dental Health Education	2
	6
Semester III	
Microbiology	4
Clinical Dental Hygiene II	4
Orientation to Dentistry II	2
Periodontics	2
Human Relations	3
Physical Education	1
	16
Semester IV	
Clinical Dental Hygiene III	6
Orientation to Dentistry III	2
Pathology	2
Therapeutics	2
American Civilization	3
Physical Education	1
	16

APPLIED SCIENCE COURSE DESCRIPTIONS

ORIENTATION TO DENTISTRY I — 1 credit

Prerequisite: None.
Two hours each week.

Combination lecture, laboratory, demonstration and observation involving introduction to dentistry, dental materials and techniques, operative dentistry and endodontics.

ORIENTATION TO DENTISTRY II — 2 credits

Prerequisite: Orientation to Dentistry I.
Four hours each week.

Combination lecture, laboratory, demonstration and observation involving introduction to pedodontics, orthodontics, oral surgery and anesthesiology, and medical emergencies.

ORIENTATION TO DENTISTRY III — 2 credits

Prerequisite: Orientation to Dentistry II.
Four hours each week.

Combination lecture, laboratory, demonstration and observation involving an introduction to prosthodontics, dental assisting, dental literature and technical writing, and dental office procedures.

ORAL AND DENTAL ANATOMY — 4 credits

Prerequisite: None.
Two two-hour lecture-laboratory periods each week.

Students receive detailed knowledge of the growth and development of the teeth, anatomy of the head and face including muscles, facial arteries and veins. Students recognize the form, function and position of each tooth in the permanent dentition. Carving of the teeth in wax to further develop manual dexterity, attention to detail and appreciation of dental skill.

CLINICAL DENTAL HYGIENE I — 4 credits

Prerequisite: Oral and Dental Anatomy.
Twelve hours each week.

Clinical experience in the application of dental hygiene techniques with a variety of patients. Daily patient load increased as student becomes more proficient. Includes experience in College of Dentistry clinics.

CLINICAL DENTAL HYGIENE II — 4 credits

Prerequisite: Clinical Dental Hygiene I.
Twelve hours each week.

A continuation of Clinical Dental Hygiene I.

CLINICAL DENTAL HYGIENE III — 6 credits

Prerequisite: Clinical Dental Hygiene II.
Eighteen hours each week.

A continuation of Clinical Dental Hygiene II.

DENTAL ROENTGENOLOGY — 2 credits

Prerequisite: None.
Two hours each week.

Course of instruction on a sound and practical phase of safe radiographic procedures. Includes lectures on the development and effects of x-radiation, demonstrations on the technical procedures of making intra and extra-oral exposures. Instruction on film identification, processing and mounting. Clinical practice in placement and angulation of film. Guest lecturers.

DENTAL HYGIENE AND PROPHYLAXIS — 4 credits

Prerequisite: Oral and Dental Anatomy.
Two hours lecture, six hours laboratory each week.

A brief history of dental hygiene; legal, ethical and professional concerns of the dental hygienist. Introduction to the various factors which contribute to the healthful condition of the mouth and teeth. Laboratory procedures in performing oral prophylaxis are taught with the use of various instruments on manikins.

DENTAL HEALTH EDUCATION — 2 credits

Prerequisite: None.
Two hours each week; lecture and demonstration.

Principles and practice of patient education to stimulate patient interest and observing preventive and control measures. Includes chairside instruction, group work and community dental health problems. Evaluation of existing dental health education materials, effective utilization and development of new materials.

PERIODONTICS — 2 credits

Prerequisite: Oral and Dental Anatomy.
Two lectures each week.

Study of the normal periodontium, principles of periodontal diseases, their classification, etiology and treatment and preventive measures within the scope of dental hygiene practice.

THERAPEUTICS **2 credits**

Prerequisite: Chemistry of Human Function.
Two lectures each week.

A background of the classification and study of drugs according to origin, physical and chemical properties, therapeutic effects and values particularly of drugs utilized in dental practice.

PATHOLOGY **2 credits**

Prerequisite: Oral and Dental Anatomy.
Two lectures each week.

Introduction to general pathology with special emphasis on oral and dental aspects.

DENTAL AUXILIARY ADVISORY COMMITTEE

Charles R. Clifford, Jr., D.D.S.
Liaison Officer between:
Dental Society and Dental Hygienists Association

Dr. Paul Ebeling, D.D.S.
Member, State Board of Dental Examiners

Dr. J. Paul Guidry, D.D.S.
Private Practitioner

Dr. Samuel E. Guyer, D.D.S.
Washington University
School of Dentistry

Dr. E. J. Hempstead, D.D.S.
Second Vice President
Greater St. Louis Dental Society

Dr. Calvin Lee, D.D.S.
Private Practitioner
Past President, Mound City Dental Society

Dr. Mayer L. Mehler, D.D.S.
Private Practitioner

Elizabeth Overschmidt, President
St. Louis Dental Assistants Society

Dr. John Purcell, D.D.S.
Former President, Greater St. Louis Dental Society

Suzanne Rehder, President
Greater St. Louis Dental Hygienists Association

Dr. Milton M. Voda, D.D.S.
Private Practitioner

Dr. John Welty, D.D.S.
Washington University
School of Dentistry

HOTEL, RESTAURANT AND INSTITUTIONAL OPERATION

ASSOCIATE DEGREE CURRICULUM

This curriculum is designed to train persons in the administrative aspects of food service as a direct supplement to the professional dietitian.

The Food Service Supervisor is responsible for the purchasing and inventory of food supplies, cleaning and maintenance of equipment, the hiring, scheduling and management of personnel, the instruction of personnel in the use and care of equipment and food preparation techniques, and the improvement of operating efficiency of food preparation and food service. In addition, this person may work under a consulting or chief dietitian interpreting menus and diets prepared by her and accomplish general menu planning for regular diets.

Trained persons may find employment as a section supervisor in a complex dietary unit of a large hospital or employment as the chief supervisory person in dietary units of smaller organizations using the services of a consultant dietitian.

While much of the data indicating demand and salary is based on positions which are anticipated would develop if trained personnel were available, there has been a positive and enthusiastic response from professionals in the field of food service. Studies conducted suggest that as many as fifty persons could be placed now (conservative estimate). It is felt that the demand would increase as supply was available. Salary expectations range from a low of $350 per month up. Most interviewees indicated the $400 per month range.

This curriculum was originally conceived as an individual offering in Food Service Supervision. Following further study the curriculum was modified to provide close alignment with the curriculum in Hotel, Motel and Restaurant Operation.

This modification provided for a common first year with an option for either specialty beginning the third semester. The second year contains 17 semester hours common to both options.

A well-equipped, modern kitchen capable of food production in large quantities is necessary as a laboratory facility for this program. This requirement may be in connection with the cafeteria operation in a student union or large dining room. The services of a dietitian are recommended for instruction in courses requiring the technical knowledge of dietetics.

HOTEL, RESTAURANT AND INSTITUTIONAL OPERATION

CURRICULUM

First Semester	**Credits**
Communications	3
Quantity Food Preparation	6
Purchasing	3
Orientation for the Hospitality Industry	1
American Civilization	3
Physical Education	1
	17

Second Semester	
Communications	3
Advanced Food Preparation	4
Equipment Selection and Maintenance	2
Safety and Sanitation	1
Introduction to Business Administration	3
Business Mathematics	2
	15

Summer Session	
Field Experience Conference	2
	2

INSTITUTIONAL FOOD SERVICE OPERATIONS OPTION:

Third Semester	
Meat Analysis	1
Business Organization and Management	3
Medical and Hospital Organization	1
Nutrition	3
Meal Planning and Service	4
Speech: Oral Communications	3
	15

Fourth Semester	
Human Relations	3
Management Problems	2
Applied Accounting	3
Introduction to Diet Therapy	4
Physical Education	1
*Elective	3
	16

*Science Course is recommended.

APPENDIX D

APPLIED SCIENCE COURSE DESCRIPTIONS

QUANTITY FOOD PREPARATION — 6 credits

Prerequisite: None.
Three lecture hours, nine hours laboratory each week.

Familiarization with tools and equipment, kitchen organization, quantity recipes of basic foods, preparation of salads, pastry, meats, vegetables, sauces, etc. in quantity.

PURCHASING — 3 credits

Prerequisite: None.
Three hours each week.

Purchasing policy and purchasing duties. Inventory, receiving, and issuing of foods. Food specifications. Food grading. Comparative buying. Convenience foods.

MEAL PLANNING AND SERVICE — 4 credits

Prerequisite: Food Preparation and Advanced Food Preparation.
Two lectures and four hours laboratory each week.

Meal planning and service planning and serving menus for all phases of food service—snack bar, cafeteria, coffee shop, restaurant and banquet. Making production schedule and order list. Preparation and serving of menus planned. Attention to be given to use of personnel, operating reports, and portion control.

MEAT ANALYSIS — 1 credit

Prerequisite: None.
One hour each week.

Study of the fabrication of beef, pork, veal, lamb, poultry and seafoods. Proper cuts and their use under various conditions. Recognition of the cuts and quality. Knowledge necessary to proper purchasing of meats.

ADVANCED FOOD PREPARATION — 4 credits

Prerequisite: Quantity Food Preparation.
Two hours lecture and six hours laboratory each week.

Special instruction in the arts of food preparation. Ice carving, special sauces, cake decoration, hors d'oeuvres tray, gum paste, display food pieces. Demonstration by area chefs.

ORIENTATION FOR THE HOSPITALITY INDUSTRY — 1 credit

Prerequisite: None.
One hour each week.

A series of lectures by restaurant operators and owners who are recognized as being outstanding in the food service field. Speakers from the restaurant industry present lecture discussions on the operations, trends, problems, organization and management of their particular restaurants.

FIELD EXPERIENCE CONFERENCE — 2 credits

Prerequisite: Quantity Food Preparation and Advanced Food Preparation; and concurrent employment in the Hotel, Restaurant and Institutional Industries.
Two hours each week.

Structured to provide students with an opportunity to discuss in group conferences the various conditions they have encountered in their summer work experiences and to assist them in relating the knowledge they have accumulated to date. Student, employer and instructor conferences are also scheduled.

EQUIPMENT SELECTION AND MAINTENANCE — 2 credits

Prerequisite: None.
Two hours each week.

Familiarization with all hand tools and machines. Use, care, maintenance, sanitation, and training procedures. Equipment, china, silver, and hand tool specification writing.

MANAGEMENT PROBLEMS — 2 credits

Prerequisite: None.
Two hours each week.

Personnel selection, placement, training, scheduling, supervising. Theory cases with class solutions. Hotel, Restaurant and Institutional lectures to discuss all phases of their operation.

MEDICAL AND HOSPITAL ORGANIZATION — 1 credit

Prerequisite: None.
One hour each week.

A course of lectures and discussions of the organization of hospitals and other medical institutions. The interaction of the various departments and their relationship to the medical staff and the patient. The course includes field trips to selected medical facilities and guest lecturers from the field of medical care.

INTRODUCTION TO DIET THERAPY **4 credits**

Prerequisite: Nutrition.
Three hours lecture and one two-hour laboratory period each week.

An introductory course emphasizing the specialized responsibilities for patient food service; the various types of special diets, processing diet changes, writing modified diets under dietitian's direction, maintaining nourishment records and serving as liaison between patient and dietitian. The course will present practical problems in the conversion of special diet orders into food portions.

NUTRITION **3 credits**

Prerequisite: None.
Three hours each week.

A study of the essential nutrients and their values in various food groups; their functions in the body, and how to determine the food needs of the indivdual.

SAFETY AND SANITATION **1 credit**

Prerequisite: None.
One hour each week.

Study of the various aspects of accidents. Causes and the prevention of accidents in the hospitality industry. Cause and prevention of food borne disease. Effective methods and sanitary control for operation of food establishment.

HOTEL, RESTAURANT AND INSTITUTIONAL OPERATION

ADVISORY COMMITTEE

Mr. Boris Axelrod
Director of Food Services
Jewish Hospital

Miss Carol Giblin, Nutritionist
St. Louis County Health Department

Mrs. Ruth Griffith
Associate Director of Dietetics
Barnes Hospital

Miss Alice S. Harper
Chief Dietitian
Veterans Administration Hospital

Miss Joe Doris Hubbard
Director of Food Services
Jewish Center for the Aged

Mrs. Mary Ann Sauter
Chief Dietitian
Malcolm Bliss Mental Health Center

Sister Paul Louise Anth, C.S.J.
Department of Home Economics
Fontbonne College

MEDICAL OFFICE ASSISTANT

TWO SEMESTER—CERTIFICATE CURRICULUM

The curriculum as now visualized and recommended for development is to train personnel primarily for work in the physician's office. Since most of these jobs involve a combination of duties, the training must embrace elements of secretarial business and medical training.

The Medical Office Assistant greets the patient, sees to his comfort, gathers certain personal and medical information for the physician and assists him during the examination or treatment of the patient. Under the physician's direction, she may perform minor laboratory tests or assist in performing procedures such as electro-cardiography or the taking of x-ray pictures. In addition to these simple professional [illegible]es, the Medical Office Assistant may answer [illegible]es, perform simple bookkeeping and clerical work, perform some typing and transcription work and maintain the office records and supplies.

The survey of five hundred area physicians indicates a high degree of interest in this type of training with something better than 40% response to the questionnaire. Many respondents expressed their feelings concerning the inadequacy of existing training. The preference for workers in these jobs is 100% female. Starting salaries are usually in the $275 to $325 per month range.

The two-semester curriculum provides training in minor laboratory techniques, patient-physician-assistant relationships, medical terminology, clinic techniques and modern office practice, including typing, simple bookkeeping, supply control and public relations. Applicants should present a well-groomed appearance and be in the top two-thirds of their high school class.

No special facilities are needed to present this curriculum. Enrollment should be from thirty to fifty students.

A part-time instructor, preferably an experienced assistant, may be needed for instruction in Medical Office Procedures and Medical Terminology.

MEDICAL OFFICE ASSISTANT CURRICULUM

Semester I	**Credits**
Medical Office Management	3
Elementary Typewriting	3
Medical Terminology	3
Basic Business Communications	3
Clerical Practice I	3
Topographical Anatomy	1
	16
Semester II	
Clinical Procedures	3
Machine Transcription	2
Applied Accounting	3
Intermediate Typewriting	2
Social Science Elective	3
Clinical Practice	3
	16

APPLIED SCIENCE COURSE DESCRIPTIONS

MEDICAL OFFICE MANAGEMENT **3 credits**

Prerequisite: None.
Three lectures each week.

An introduction to professional health services and functions of assistant. Assisting physician with patient examination and treatment. Use of electrocardiogram, basal metabolism and x-ray equipment. The importance of medical ethics and patient privacy is emphasized.

CLINICAL PROCEDURES **3 credits**

Prerequisite: Medical Office Management.
Three hours each week.

A study of minor laboratory procedures performed in the physician's office. The mechanics of performing routine urinalysis, using hematocrit apparatus, collecting and handling specimens will be taught. The importance of sterile technique is emphasized.

MEDICAL TERMINOLOGY 3 credits

Prerequisite: None.
Three lectures each week.

A study of nomenclature and terminology used in the medical profession with emphasis on the proper use in written communications.

CLINICAL PRACTICE 3 credits

Prerequisite: Completion of Semester I of Medical Office Assistant Curriculum.
Eight hours each week.

Clinical practice in cooperating physicians' offices to gain actual working experience.

TOPOGRAPHICAL ANATOMY 1 credit

Prerequisite: None.
One lecture each week.

A survey of gross human anatomy using lecture and charts. The course is designed to acquaint the student with the location and function of parts of the human body.

MEDICAL OFFICE ASSISTANT ADVISORY COMMITTEE

M. Richard Carlin, M.D.
General Practice

Miss Corrine Hallquist
Medical Secretaries and Assistants Society of Greater St. Louis

Miss Rosemary Kliethermes, President
Medical Secretaries and Assistants Society of Greater St. Louis

Malcolm L. Peterson, M.D.
Director, Division of Gastroenterology
Washington University School of Medicine
Barnes and Wohl Hospitals

Mrs. Ethel Rayburn
Medical Secretaries and Assistants Society of Greater St. Louis

Lois C. Wyatt, M.D.
General Practice

RADIOLOGIC TECHNOLOGY

ASSOCIATE DEGREE CURRICULUM

The Radiologic Technician takes x-ray photographs of various portions of the body to assist medical officers in detection of foreign bodies and diagnosis of disease and injury. He positions the patient under the x-ray machine and regulates the controls to expose the film. He develops and dries the film. He may assist in x-ray therapy, working under the direct supervision of the Radiologist. He may do simple nuclear isotope diagnostic tests and maintain the records of x-rays. He performs related office duties.

The training for a Radiologic Technician is a combination of theory and manual skills. This person should have a good background in anatomy and physiology, biology and some physics and mathematics, and have an ability to communicate both in writing and verbally. While no licensing law exists in the State of Missouri for this occupation at this time, there is a rather strong registry (The American Society of Radiologic Technologists) which prescribes a minimum amount of training. The requirements of this body make it necessary to present the curriculum in close affiliation with an approved x-ray laboratory. In addition to the academic work, the registry requires 2400 hours practical experience in an approved laboratory for registration. 832 hours of this requirement are accomplished in conjunction with the academic program. The remaining 1568 must be accomplished during summers and following the completion of the academic work. Non-registered technicians are employed, usually at a lower salary, when registered technicians are not available. The student is advised to fulfill registry requirements through affiliation with cooperating laboratories.

There has been a rather strong growing interest on the part of radiologists and directors of the St. Louis area hospital-based schools to have the Junior College initiate a program of instruction in conjunction with the hospital laboratories. It is felt that this type of curriculum will give the individual a much stronger academic background, allow the joint operation to handle more students than is presently being done with the same clinical space, and relieve the hospital laboratories of part of the burden of the training.

This curriculum will require students with strong motivation and excellent physical health. Enrollment will be limited to 20 - 30 students due to the dependence on clinical facilities.

A staff member with experience in Radiologic Technology Education will be necessary to coordinate the curriculum and for instruction in special courses.

RADIOLOGIC TECHNOLOGY CURRICULUM

Semester I	**Credits**
Communications I	3
Human Anatomy and Physiology I	3
Technical Mathematics I	3
Orientation to the Radiologic Laboratory	2
Radiologic Technology I	3
Clinical Experience I	1
Physical Education I	1
	16

Semester II	
Communications II	3
Human Anatomy and Physiology II	3
Physics	4
Radiologic Technology II	3
Clinical Experience II	3
Physical Education	1
	17

Semester III	
American Civilization	3
X-Ray Theory and Mechanics	3
Radiologic Pathology	2
Radiologic Technology III	3
Clinical Experience III	4
	15

Semester IV	
Human Relations	3
Radiation Therapy and Radiobiology	2
Nuclear Medicine Technology	2
Film Critique	1
Radiologic Technology IV	3
Clinical Experience IV	5
	16

APPLIED SCIENCE COURSE DESCRIPTIONS

RADIOLOGIC TECHNOLOGY I **3 credits**

Prerequisite: None.
Three hours each week.

A study of the photographic effect of x-rays; chemistry and processing of radiographs; the fundamental principles of radiographic quality; instruction in the radiographic positioning of the structures and organs of the body.

RADIOLOGIC TECHNOLOGY II **3 credits**

Prerequisite: Radiologic Technology I.
Three hours each week.

A continuation of the basic principles of radiographic positioning; the use of contrast media in common radiographic procedures and techniques specific to radiographic examinations of children.

RADIOLOGIC TECHNOLOGY III **3 credits**

Prerequisite: Radiologic Technology II.
Three hours each week.

A study of specialized and highly technical procedures carried out in the department of radiology including the use of special equipment and opaque media used.

RADIOLOGIC TECHNOLOGY IV **3 credits**

Prerequisite: Radiologic Technology III.
Three hours each week.

A study of intraoral radiography; advanced technical consideration of radiographic exposure factors and principles of administration and supervision in a department of radiology.

X-RAY THEORY AND MECHANICS **3 credits**

Prerequisite: Technical Mathematics I.
Three hours each week.

A study of the fundamentals of magnetism, electricity, and radiation; construction and routine maintenance of equipment to permit detection and correction of simple difficulties which interfere with or prevent the proper function of the equipment or accessories.

RADIATION THERAPY AND RADIOGIOLOGY **2 credits**

Prerequisite: X-Ray Theory and Mechanics.
Two hours each week.

The use of x-rays in therapy. A course emphasizing the absorption of radiation, its effect upon tissue and tissue recovery rate.

RADIOLOGIC PATHOLOGY **2 credits**

Prerequisite: Radiologic Technology II.
Two hours each week.

To acquaint the student with certain changes which occur in disease and injury and their application to radiologic technology.

NUCLEAR MEDICINE TECHNOLOGY **2 credits**

Prerequisite: X-Ray Theory and Mechanics and Fundamentals of Chemistry.
Two hours each week.

To acquaint the student with the fundamentals of radioisotope technology and the role of the technologist in their use.

FILM CRITIQUE **1 credit**

Prerequisite: Radiologic Technology III.
One hour each week.

A critical evaluation of the technical aspects of the radiograph, whereby the student applies knowledge obtained in previous courses.

CLINICAL EXPERIENCE I **1 credit**

Prerequisite: Concurrent enrollment in the Radiologic Technology curriculum.
Four hours each week in a radiology laboratory.

Practicum in processing radiographs and basic patient positioning.

CLINICAL EXPERIENCE II **3 credits**

Prerequisite: Clinical Experience I.
Twelve hours each week in a radiology laboratory.

Practicum in radiographic positioning, the use of contrast media and pediatric radiography.

CLINICAL EXPERIENCE III **4 credits**

Prerequisite: Clinical Experience II.
Sixteen hours each week in a radiology laboratory.

Practicum in the operation of specialized equipment used in highly technical procedures.

CLINICAL EXPERIENCE IV **5 credits**

Prerequisite: Clinical Experience III.
Twenty hours each week in a radiology laboratory.

Practicum in intraoral radiography and a continuation of experience in all phases of radiologic technology.

ORIENTATION TO THE RADIOLOGIC LABORATORY 2 credits

Prerequisite: None.
Two hours each week.

Lectures to acquaint the student with the importance of radiology in health care; the interaction of the department, other health services, patient and physician. Explanation of controlling registry requirements. Department records and the ethics of the radiologic technician are discussed.

RADIOLOGIC TECHNOLOGY ADVISORY COMMITTEE

*Armand E. Brodeur, M.D.
Department of Radiology
Cardinal Glennon Hospital

C. J. Cherre, M.D.
Director of Radiology
St. Joseph's Hospital
St. Charles, Missouri

Kenneth Marks, R.T.
Supervisor, Department of Radiology
The Jewish Hospital of St. Louis

Sister Mary Alacoque Anger, S.S.M.
Department of Radiologic Technology
St. Mary's Hospital

Sister M. Johnita Dempsey, R.S.M.
Assistant Director
School of Radiologic Technology
St. John's Mercy Hospital

Sister Velma Kampschmidt, R.N., R.T.
Chief Radiologic Technologist
Deaconess Hospital

Mr. Ulysses B. Murray, R.T.
Chief Radiologic Technologist
Department of Radiology
Homer G. Phillips Hospital

Juan Taveras, M.D., Director
Mallinckrodt Institute of Radiology
Washington University School of Medicine

Mr. Jean L. Tomlinson, R.T.
Director of Technical Training Program
Mallinckrodt Institute of Radiology
Washington University School of Medicine

**Sister Peter Claver Brickus, S.S.M.
Department of Radiologic Technology
St. Mary's Hospital

*Chairman of Advisory Committee and guest lecturer.

**New member as of June, 1968.

APPENDIX F

LABORATORY AFFILIATION INFORMAL AGREEMENT

Agreement between Forest Park Community College and (name of clinic facility) for a period of one year beginning September 18, 1967. Prior to the date of termination (date) the agreement will be reviewed by both parties. The agreement will be automatically renewed unless either party requests a change of termination.

The parties named hereby mutually and informally agree with each other to the following:

Students registered in the Radiologic Technology curriculum of Forest Park Community College may utilize for clinical experience the X-Ray facilities of (name). The days and hours of clinical experience to be jointly planned and agreed to by the Dean of Instruction of Forest Park, or his designated representative; and the Director of Radiology of (name), or his designated representative.

Specific Responsibilities of the Clinical Facility

1. To supply film badges indicating radiation exposure for use by the students as needed.
2. To supply opportunity for practical and/or observational experience designed to supplement theory training given by the college.
3. To supervise this practical experience as necessary to assure safe practice for the student and others.
4. To assist in maintaining such records as are necessary to evaluate student attendance and proficiency.
5. To refer disciplinary problems to the faculty of Forest Park Community College, except that the Clinical Facility reserves the right to immediately remove the student from the clinic area in cases of rule violation leading to unsafe practice or detrimental effect to the clinic or student.
6. The clinic may, in conjunction with the faculty, schedule students for additional practice in excess of that scheduled by the College. This additional practice is to be recorded and applied toward the fulfillment of the 2400 hour requirement for registry examination.

Specific Responsibilities of the College

1. Supply opportunity for training by qualified instructor as expressed in the curriculum.
2. Cooperate with the Clinic Facility in planning and evaluating the practical experience of the students.
3. Require the students to be properly attired when reporting for clinical experience. (A reasonable period is allowed initially for the student to acquire the specified uniform.)
4. Cooperate with the Clinic Facility in matters of student discipline where the Clinic Facility is affected.
5. Cooperate with the Clinic Facility in planning the number of students engaged in practical experience during any given period.

General Consideration –

Upon successful completion of the course of study outlined by the College, Forest Park Community College will grant the Associate Degree in Radiologic Technology.

Those students successful in completing the Associate Degree will be given the opportunity to fulfill the additional practicum necessary for eligibility to take examination for registry. The Clinic Facility will signify by whatever means required by the Registry that those students successfully completing this requirement have accomplished this.

The remuneration of students for practical experience in the form of stipends, wages or other allowances will be the prerogative of the Clinical Facility; with the provision that, for Forest Park students, each Clinical Facility must agree to act in the same manner.

Additional considerations or problems not anticipated by this Agreement will be developed as necessary by joint action of the College and Clinic Facility representatives.

Signed: ______________________________
Forest Park Community College
Date__________

Signed: ______________________________
(Clinic Facility name)
Date______________

TENTATIVE CURRICULA FOR POSSIBLE FUTURE IMPLEMENTATION

APPENDICES G through M

CHEMICAL RESEARCH LABORATORY TECHNOLOGY

ASSOCIATE DEGREE CURRICULUM

Interviews with physicians and biochemists at Washington and St. Louis University Medical Schools have uncovered fairly strong interest in the possibility of training two-year graduates in chemistry or chemical technology to serve as laboratory assistants in the universities' medical and biochemical research laboratories. On the basis of these interviews, it is concluded that there are probably thirty openings per year in this field at the two universities, at a starting salary of $350 to $375 per month. In addition, there is the possibility that the chemical process industry in the St. Louis area would offer additional job opportunities in production control analysis for graduates of such a program.

The duties of a research laboratory assistant, whether working in industry or medicine, would be primarily to assist the research chemist or physician by performing the more or less routine analytical and chemical housekeeping chores which must be done in any laboratory. In performing these duties, he would be under the direct supervision of the research scientist. Thus, familiarity with chemical laboratory techniques and equipment would be necessary, but thorough knowledge of scientific theory in any specialized field would not be.

This curriculum is designed to train students for the position of chemical research laboratory assistant. The curriculum presented is particularly designed for the medical and biochemical areas; with slight modification, however, it could probably be made suitable for the industrial field as well. The course content of the curriculum is such that students from the middle third of their high school class should be able to do well, if they are properly motivated.

CHEMICAL RESEARCH LABORATORY ASSISTANT CURRICULUM

Semester I	**Credits**
Communications I	3
Technical Mathematics I	3
Introductory Biology	4
Technical Chemistry	4
American Civilization	3
	17

Semester II	
Communications II	3
Technical Mathematics II	3
General Microbiology	4
Technical Qualitative Analysis	4
Human Relations	3
	17

Semester III	
Technical Mathematics III	3
Technical Quantitative Analysis I	5
Technical Physics I	4
Elective	3
Physical Education	1
	16

Semester IV	
Organic Chemistry	5
Technical Quantitative Analysis II	5
Technical Physics II	4
Elective	1
Physical Education	1
	16

APPLIED SCIENCE COURSE DESCRIPTIONS

TECHNICAL QUALITATIVE ANALYSIS 4 credits

Prerequisite: Technical Chemistry and Technical Mathematics I.
Three lectures and one three-hour laboratory period each week.

The lectures deal with stoichiometry and chemical arithmetic, the chemistry of reactions, and the laws of equilibrium and solution as they apply to the separation and identification of metals and acid radicals. The laboratory work deals with the application of the laws of equilibrium and solution in the separation of metals and acid radicals, and with the preparation of the various solutions needed.

TECHNICAL QUANTITATIVE ANALYSIS I 5 credits

Prerequisite: Technical Qualitative Analysis and Technical Mathematics II.
Two lectures and three three-hour laboratory periods each week.

The lectures include evaluation of data, gravimetric methods, volumetric methods, oxidation-reduction methods, acid-base systems, PH measurements, and complex formation. The laboratory work provides an opportunity for the application of the principles developed in the lectures.

TECHNICAL QUANTITATIVE ANALYSIS II 5 credits

Prerequisite: Technical Quantitative Analysis I.
Three lectures and two three-hour laboratory periods each week.

This course involves the study of instrumental methods of analysis. The lectures and laboratory work will deal with chromatography, spectrophotometry, methods for the analysis of gases and potentiometric, electrometric, and coulometric methods of analysis.

DENTAL LABORATORY TECHNOLOGY

ASSOCIATE DEGREE CURRICULUM

This program is designed to train students for work as a dental laboratory technician—either in a small (two to ten man) commercial dental laboratory, or in the dentist's private office. In this position, he would work as an artisan preparing orthodontic appliances, dental crowns and bridges, and other dental prosthodontic appliances as prescribed by the dentist. Supervision of methods would be at a minimum—the technician's primary function would be to produce the prescribed appliance as specified by the dentist.

A personal interview survey conducted during the fall of 1966 indicated little or no interest on the part of the larger commercial dental laboratories in graduates of a junior college program. Mail and telephone surveys of dentists in the area, however, indicated a strong interest on the part of a number of individual dentists who had equipped their offices with a dental laboratory, but had been unable to get anyone to staff it. It is estimated, on the basis of the survey of dentists, that it should be possible to place perhaps six technicians per year with individual dentists in the St. Louis area, if a suitable training program is offered. Salaries of experienced technicians now working for individual dentists are in the range of $350 to $499 per month.

Dental Laboratory Technicians are certified by the American Dental Association after completion of:

1. A minimum of two semesters of an academic program approved by the A.D.A.
2. A minimum of one calendar year of on-the-job training.
3. A minimum of three calendar years of work experience.

The on-the-job training may be taken either in an approved educational institution or in an approved commercial dental laboratory.

The successful dental technician is primarily an artisan and is usually strongly introverted in psychological make-up.

Specific equipment needed includes:

1. Precious metal casting equipment.
2. Ceramic and precious metal electrical furnaces.
3. Various specialized hand tools.

Given a suitable laboratory, the cost of the specialized equipment is probably under $10,000.

DENTAL LABORATORY TECHNOLOGY CURRICULUM

Semester	**Credits**
Communications I	3
Dental Physical Science	3
Elements of Dental Technology	1
Dental Anatomy & Physiology	3
Beginning Dental Laboratory	2
Elective	3
Physical Education	1
	16

Semester II	
Communications II	3
Intermediate Dental Laboratory	4
Tooth Carving	2
Dental Prosthetics	3
Pre-Clinical Training	2
Physical Education	1
	15

Second Year

Due to the certification requirements, it is felt at this time the second year would consist of supervised training in the production of dental prosthesis. This training could be accomplished in cooperative dental laboratories.

APPLIED SCIENCE COURSE DESCRIPTIONS

DENTAL PHYSICAL SCIENCE 3 credits

The application of the fundamental laws of physics, chemistry and mathematics to situations encountered in dental offices, dental clinics and dental laboratories is presented in this course.

ELEMENTS OF DENTAL TECHNOLOGY 1 credit

This introductory course acquaints the student with the field of dental laboratory technology, and the categories of training and employment. A study is made of the principles of ethics as they apply to the dental profession and the auxiliary dental personnel, the principles of jurisprudence, and the history and function of the American Dental Association and the National Association of Dental Laboratories. Aptitude tests, conferences and information about job qualifications help the student determine his fitness for the occupation. Lectures on how to study and how to use the library are included.

DENTAL ANATOMY AND PHYSIOLOGY 3 credits

This course deals with dental anatomy and physiology; the growth, development and function of the teeth and their supporting tissues; normal and abnormal dental conditions. One of the primary objectives is to give the student an understanding of dental terminology.

BEGINNING DENTAL LABORATORY 2 credits

In this course students are taught how to pour, polish, duplicate and articulate models; how to make dies, how to use the sonic cleanser, lathe, hydrocolloid equipment, and how to make and care for impression trays.

INTERMEDIATE DENTAL LABORATORY 4 credits

In this course instruction is given in the carving of wax patterns for inlays abutments and pontics for fixed bridges; and in the assembling and soldering of component parts of a bridge. The requirements and functions of removable bridges, how to design and complete a cast removable bridge are also presented.

TOOTH CARVING 2 credits

In this course instruction will be provided in the arts of drawing teeth to scale and reproducing teeth in wax. These skills will assist the student in the fabrication of dental prosthetic appliances which are anatomically true to form.

DENTAL PROSTHETICS 3 credits

This course provides instruction in arranging and positioning denture teeth, processing dental resins for denture bases, and techniques of repairing and relining denture bases.

PRE-CLINICAL TRAINING 2 credits

This training program affords the student the opportunity to obtain practical experience in a dentist's office, a laboratory and/or a clinic. The student will observe technicians at work in each category, i.e., the generalist, the full denture technician, technician in partial denture, technician in ceramics and technician in crown and bridge.

HOSPITAL UNIT SERVICE MANAGER

TWO SEMESTER—CERTIFICATE CURRICULUM

As visualized now, the program is planned to train personnel to assume all non-nursing responsibilities and functions related to the administration of the hospital patient unit. Dependent upon the size of such unit, the Service Manager may have one or more assistants under his or her supervision.

The specific duties will include: constant contact with the housekeeping and maintenance departments; continuous adequate inventory of supplies and equipment; time schedules; messenger service; transportation of patients; budgeting cost control and economy of utilization, as related to a patient unit.

In addition, the duties of a more general nature may involve accumulation of data for re-evaluation of existing procedures, quality control, sanitation and orientation and on-the-job training of service department personnel.

The Service Manager is expected to work during the conventional business hours, but is responsible at all times for the efficient functioning of the patient unit. The career is most suitable for mature women with previous business or public service oriented working experience, preferably in some supervisory capacity.

The possible initiation of this program in the Junior College District will not involve unusual expenditures or facilities expansion. It will require, however, affiliation with hospitals, to provide students with practical experience and familiarity with various systems of administrative procedures employed by local hospitals.

HOSPITAL UNIT SERVICE MANAGER CURRICULUM

Semester I	**Credits**
Communications I	3
Basic Mathematics	3
Topographical Anatomy	1
Human Relations	3
Medical Record Science I	3
Hospital Organization	3
	16

Semester II	
Communications II	3
Applied Accounting	3
Medical Ethics and Law	1
Patient Unit Management	3
Hospital Practice	6
	16

APPLIED SCIENCE COURSE DESCRIPTIONS

MEDICAL RECORDS SCIENCE I **3 credits**

Prerequisite: None.

Three hours per week, lectures and demonstration.

Introduction to general principles of hospital record keeping and survey of history of medicine. The topics studied will include: types of medical records, their respective purpose and significance, their medico-legal aspects and related hospital and medical staff procedures.

HOSPITAL ORGANIZATION **3 credits**

Prerequisite: None.
Three hours per week.

A systematic study of the individual hospital departments, their functions, interdepartmental interactions and their respective relationship to the medical staff and patients. The comprehensive survey of basic types of administrative organization, as related to the hospital's size, location, affiliation, etc., concludes the course.

MEDICAL ETHICS AND LAW **1 credit**

Prerequisite: None.
One lecture per week.

A survey course, designed to acquaint a student with the basic principles of medical ethics and laws and to provide general orientation to the health field.

PATIENT UNIT MANAGEMENT **3 credits**

Prerequisite: None.
Three lectures per week.

In-depth study of the responsibilities, obligations and duties of the service manager. The topics covered include: patient unit organization and management, relationship to the nursing and medical personnel, liaison with other hospital departments, service personnel and their duties, scheduling, inventory, budget and record keeping.

HOSPITAL PRACTICE **6 credits**

Prerequisite: Second Semester standing in Hospital Unit Service Manager Curriculum.
Twenty-four hours per week.

Practical hospital experience coordinated with the Patient Unit Management course taken concurrently.

TOPOGRAPHICAL ANATOMY **1 credit**

Prerequisite: None.
One lecture per week.

A survey of gross human anatomy using lectures and charts. The course is designed to acquaint the student with the location and function of parts of the human body.

INHALATION THERAPY TECHNOLOGY

ASSOCIATE DEGREE CURRICULUM

The Inhalation Therapist administers oxygen and other gases in prescribed dilutions to patients, according to physician's orders. Uses a variety of methods such as intra-tracheal, cannula, mask and tent, depending on method designated, to aid in the treatment of a number of conditions in which anoxia occurs.

Maintains, adjusts, cleans various oxygen administering apparatus such as IPPB machines, tents, flowmeters, valves, masks. Selects and transports equipment to patient as ordered. Instructs patient in the nature and methods of treatment to allow patient to assist and reduce anxiety.

Maintains records of treatments and equipment. Conducts periodic check of equipment in use and in storage.

Inhalation Therapy as a specialty is relatively new. In recent years, interest in the field and demand for trained personnel has been spurred primarily by two conditions:

1. The continued shortage of registered nurses, and
2. The recent development of new equipment for treatment through the use of gases.

The increased use of new equipment such as IPPB (intermittent positive pressure breathing) apparatus has caused the need for personnel particularly trained in these techniques to far exceed the available supply of Inhalation Therapists. This situation has led to many hospitals developing and training their own personnel by whatever means are available. As a result, the training and use of persons assigned to this job varies from one facility to another.

It should be recognized that this job and the training are in a developmental period. Training requirements may be subject to change.

The curriculum is designed to supply the student with the necessary academic background to pursue further training in the hospital under the guidance of a Registered Technician.

INHALATION THERAPY TECHNOLOGY CURRICULUM

Semester 1	Credits
Communications I	3
Chemistry of Human Function	4
Basic Mathematics	3
Human Anatomy & Physiology I	3
Human Relations	3
	16

Semester II	
Communications II	3
Physical Science	3
Human Anatomy & Physiology II	3
General Microbiology	4
Medical and Hospital Organization	2
	15

Second Year

During this year the student is assigned to a cooperating hospital for clinical work under the guidance of a Registered Inhalation Therapy Technician. The student receives instruction and practice in the care of the equipment and its use in actual situations.

APPLIED SCIENCE COURSE DESCRIPTIONS

PHYSICAL SCIENCE **3 credits**

An introductory course in the fundamentals of magnetism, fluids, gases and simple machines. The action of gases under pressure is emphasized for the inhalation therapy student.

MEDICAL AND HOSPITAL ORGANIZATION **2 credits**

A course of lectures and discussions of the organization of hospitals and other medical institutions. The interaction of the various departments and their relationship to the medical staff and the patient. The course includes field trips to selected medical facilities and guest lecturers from the field of medical care.

MEDICAL RECORD TECHNICIAN

ASSOCIATE DEGREE CURRICULUM

The Medical Record Technician works in the medical record department of a hospital, nursing home, clinic, or other health agency. The technician is trained to assist the registered medical record librarian in any or all of the department operations. Upon the completion of an accredited program, the student becomes eligible for the status of an accredited Medical Record Technician, as granted by the American Association of Medical Record Librarians, through a national qualifying examination.

The collected data indicate a serious shortage of trained medical record personnel and a correspondingly high demand for new graduates.

This program is designed to satisfy the requirements and the recommendations set forth by the American Association of Medical Record Librarians and the Council on Medical Education, American Medical Association, for the medical record technician programs. In addition, this program provides a substantial background for further work toward the baccalaureate degree.

The installation of such a program in the junior college will not require any new facilities or substantial expenditures. Affiliation with accredited hospitals will be necessary.

MEDICAL RECORD TECHNICIAN CURRICULUM

Semester I	**Credits**
Communications I	3
Human Anatomy and Physiology I	3
*Typewriting	3
Medical Terminology	3
Medical Record Science I	3
Medical Ethics and Law	1
Physical Education	1
	17

Semester II	
Communications II	3
Human Anatomy and Physiology II	3
Machine Transcription	2
College Algebra	3
Medical Record Science II	3
Physical Education	1
	15

Semester III	
Public Speaking	3
Introduction to Data Processing	3
Elementary Statistics	3
Medical Record Science III	3
Directed Practice I	4
	16

Semester IV	
Human Relations	3
Speed Reading	2
Medical Record Science IV	3
Directed Practice II	6
Elective	2
	16

*Proficiency test to indicate level of typewriting course.

APPLIED SCIENCE COURSE DESCRIPTIONS

MEDICAL RECORD SCIENCE I **3 credits**

Prerequisite: None.
Three hours per week, lectures and demonstrations.

Introduction to general principles of hospital record keeping, survey of history of medicine, and the organization of health care institutions. The topics studied will include: types of medical records, their respective purpose and significance, their contents, medico-legal aspects and related hospital and medical staff procedures.

MEDICAL RECORD SCIENCE II **3 credits**

Prerequisite: Medical Record Science I.
Two lectures and two hours laboratory per week.

In-depth study of the following topics: medical record personnel; securing, evaluation, numbering and filing of medical records; admitting and discharge procedures; indexes and registers.

MEDICAL RECORD SCIENCE III **3 credits**

Prerequisite: Medical Record Science II.
Two hours lecture and two hours laboratory per week.

Continuation of Medical Record Science II. The study of the use of medical records; coding and indexing of diseases and therapies by SNDO and ICDA; record retention; organization and management; and medical reports and correspondence.

MEDICAL RECORD SCIENCE IV **3 credits**

Prerequisite: Medical Record Science III.
Two hours lecture and two hours laboratory per week.

Conclusion of the in-depth study of medical record science, to include: statistics, legal aspects, hospital accreditation standards, cancer or tumor registry; out-patient department records; medical staff committee reports; medical library; and medical records in nursing homes and extended care facilities.

DIRECTED PRACTICE I **4 credits**

Prerequisite: Enrollment in Medical Record Science III.
Fourteen hours per week.

The student will be working under supervision in the hospital medical record department to gain practical experience in procedures covered concurrently in Medical Record Science III.

DIRECTED PRACTICE II **6 credits**

Prerequisite: Enrollment in Medical Record Science IV.
Twenty-four hours per week.

Continuation of Directed Practice I. Practical hospital experience in procedures covered in Medical Record Science IV.

MEDICAL ETHICS AND LAW **1 credit**

Prerequisite: None.
One lecture per week.

A survey course, designed to acquaint a student with the basic principles of medical ethics and laws and to provide general orientation to the health field.

MEDICAL TERMINOLOGY **3 credits**

Prerequisite: None.
Three hours lecture each week.

A study of nomenclature and terminology used in the medical profession with emphasis on the proper use in written communications.

OPTOMETRIC ASSISTING

TWO SEMESTER – CERTIFICATE CURRICULUM

A survey of the field of optometry in the St. Louis area reveals that a certificate curriculum in Optometric Assisting would be welcomed in the St. Louis area.

This curriculum is designed to train the graduate for work in the Optometry office. In most offices this work is a combination of clerical and clinical duties.

The curriculum content is such that properly motivated students from the middle third of the high school class should do well.

An optometrist will be needed as a part-time teacher for the Optometric Procedures courses. A special laboratory, designed to simulate the refractive testing and dispensing areas of an optometric office will be needed to furnish laboratory experience in optometric assisting procedures.

OPTOMETRIC ASSISTING CURRICULUM

Semester I	**Credits**
Communications I	3
Elementary Typewriting	3
Clerical Practice I	3
Optometric Procedures I	4
Applied Accounting	3
	16

Semester II	
Communications II	3
Intermediate Typewriting	3
Social Science Elective	3
Optometric Procedures II	4
Clinical Practice	3
	16

APPLIED SCIENCE COURSE DESCRIPTIONS

OPTOMETRIC PROCEDURES II **4 credits**

Prerequisite: Enrollment in the Optometric Assistant Curriculum or employment as an optometric assistant or ophthalmic dispenser.
Two one-hour lecture periods and two two-hour laboratory periods per week.

History of eye care, fundamentals of optical physics, anatomy, and physiology of the eye.

OPTOMETRIC PROCEDURES II **4 credits**

Prerequisite: Optometric Procedures I.
Two one-hour lecture periods and two two-hour laboratory periods per week.

Refractive testing of vision, techniques in visual training, fitting of spectacles and contact lenses.

CLINICAL PRACTICE **3 credits**

Prerequisite: Second semester standing in the Optometric Assistant Curriculum.
Twelve hours per week.

Clinical practice in cooperating optometrists' offices to gain actual working experience.

SUGGESTED CONTINUING EDUCATION FOR MIDDLE MANAGEMENT POSITIONS

Following interviews with administrators and consultants active in the area hospitals and nursing homes, the following conclusions were made:

1. Most health care organizations in this area lack well-trained personnel at the department head level and other middle management positions.
2. Incumbents in these positions in many cases have achieved the position by working "through the ranks". They are, therefore, usually well-trained in the technical aspects of their jobs and have a fairly complete understanding of their organization.
3. Although their "on-the-job" knowledge is good, often they have had little or no opportunity for training in the techniques of management.
4. The need, at this time, is to provide the opportunity for these people to acquire training in their areas of deficiency.

To satisfy this need, it is proposed that interested persons from this level, with counseling assistance, select courses from those offered by the college, to be pursued on a continuing education basis. Since the student in this case is likely to be proficient in the specific technical knowledge relative to his job, the courses would most probably be selected from the areas of business and general education.

A suggested pattern of selection follows:

Communications or Basic Business Communications

Human Relations

Management Problems

Applied Accounting

Business Law

Basic Mathematics or Business Mathematics

Dependent upon the area of technical knowledge and the student's depth of knowledge, courses from the various career curricula may be selected as they appear applicable. This would provide a rather broad spectrum of selection.

This pattern may be structured to provide a core of training in the business and general education fields. Following completion of this foundation, the student may select a sequence of courses from career areas to provide a "major" in maintenance, office and clerical, food service or other areas of interest.

GENERAL ACADEMIC REQUIREMENTS

COURSE DESCRIPTIONS

APPENDICES BA, GE, RS

72/73

APPENDIX BA

BUSINESS ADMINISTRATION AND BUSINESS EDUCATION COURSES

BUSINESS ADMINISTRATION

APPLIED ACCOUNTING 3 credits

Prerequisite: None.
Three hours each week.

An introductory course in the principles of accounting, combined with practice in bookkeeping techniques.

BASIC BUSINESS COMMUNICATIONS 3 credits

Prerequisite: None.
Three hours each week.

The principles of communication — the art of never being misunderstood — are emphasized in this course. Stress is placed on the importance of written communications: the techniques of dictating, preparation of short management messages; compilation and completion of applications; composition of effective sales messages, business reports and letters.

BUSINESS ORGANIZATION AND MANAGEMENT 3 credits

Prerequisite: Introduction to Business Administration recommended.
Three hours each week.

A study of basic concepts, functions, and the management process of planning, organization, staffing, direction, and control as they relate to modern business operations and problems.

ELEMENTARY STATISTICS 3 credits

Prerequisite: College Algebra.
Three hours each week.

An introduction to the basic concepts of statistical inference and to the methods of statistical analysis commonly employed by management in making decisions; to business forecasting; and to marketing research.

BUSINESS EDUCATION

CLERICAL PRACTICE I 3 credits

Prerequisite: Concurrent enrollment in a typing course.
Three hours per week.

A course designed to prepare the student to carry out the normal duties in a well-organized business office. Special topics to be covered are as follows: finding an office position, duties of a receptionist, the use of common office forms, office supplies, postal and shipping regulations, receiving and dispatching mail and freight, proper use of the telephone, transmitting an urgent message, using banking and credit service, handling office reference material, improving typing techniques, personality, human relations, and personal problems.

INTERMEDIATE TYPEWRITING 2 credits

Prerequisite: Elementary Typewriting or speed of at least 40 wpm for five minutes with a maximum of five errors.
Three hours each week.

Further development of typewriting skills with special attention given to speed building and control. Continued instruction in letter styles, tabulations, reports and forms.

ELEMENTARY TYPEWRITING 3 credits

Prerequisite: None.
Five hours each week.

Techniques in touch typewriting; development of basic skill and speed; form, style, and arrangement of typewritten material.

MACHINE TRANSCRIPTION 2 credits

Prerequisite: Communications I, or Basic Business Communications.
Two hours per week.

A course designed to instruct the student in the care, use and operation of the various transcribing machines, to copy and learn the proper form of manuscripts,. memorandums, telegrams and special letter types.

INTRODUCTION TO DATA PROCESSING 3 credits

Prerequisite: None.
Four hours each week.

Survey of data processing equipment. Introduction to punched card data systems. Discussions involving the planning and wiring of a range of equipment are included. Practical exercises are also offered.

GENERAL EDUCATION COURSES

The following is a list of suggested General Education courses as they apply to the career curricula:

COMMUNICATIONS I **3 credits**

Prerequisite: None.
Three hours each week.

A basic college course in communications skills, studied primarily from the practical aspects.

COMMUNICATIONS II **3 credits**

Prerequisite: Communications I.
Three hours each week.

A continuation of Communications I.

HUMAN RELATIONS **3 credits**

Prerequisite: None.
Three hours each week.

This course is designed as an introduction to the basic principles of sociology, general psychology, and industrial psychology. Major emphasis is placed on such topics as the origin and development of the social body, group behavior, and the problems attendant to leadership and cooperation. Designed to develop a thorough understanding of good human relationships in the industrial complex. The course also proposes to aid in the formation of sound citizenship.

PUBLIC SPEAKING **3 credits**

Prerequisite: Three credits in English.
Three hours each week.

Speech composition and organization. Audience analysis and persuasion with attention to development of listening skill. Training in the collection of material and the use of the library and experience in prepared and impromptu speaking. Introduction to common forms of group discussion.

SPEED READING **2 credits**

Prerequisite: None.
Two hours each week.

The primary purpose of this course is to teach students to read more rapidly with comprehension. Considerable drill with specialized reading aids and machines.

AMERICAN CIVILIZATION **3 credits**

Prerequisite: None.
Three hours each week.

A study of American history, institutions and government. Special consideration will be given to the Constitutions of the United States and Missouri and special historical emphasis will be placed on the twentieth century. Intended primarily for students in career curricula.

RELATED SCIENCE COURSES

The following is a list of suggested Related Science courses as they apply to the career curricula:

CHEMISTRY OF HUMAN FUNCTION **4 credits**

Prerequisite: None; high school or college chemistry recommended.
Three lectures and one three-hour laboratory period each week.

The fundamentals of inorganic, organic and biological chemistry with direct application of the field of medicine and dentistry.

FUNDAMENTALS OF CHEMISTRY I **4 credits**

Prerequisite: One unit of high school algebra.
Three lectures and one two-hour laboratory period each week.

A study of the fundamentals of chemistry and the scientific procedures used by chemists. Laboratory work is designed to give the student familiarity with laboratory equipment and to encourage the student to translate observations and conclusions to reinforce his learning of the science and its methodology. This course is designed for students not planning to major in the sciences or engineering.

ORGANIC CHEMISTRY **5 credits**

Three lectures and two three-hour laboratory periods each week.

This course surveys the entire field of elementary organic chemistry, both aliphatic and aromatic, and is designed to meet the needs of students in biology, medicine, dentistry, and science/engineering-oriented students.

TECHNICAL CHEMISTRY **4 credits**

Prerequisite: None.
Three lectures and one three-hour laboratory period each week.

A study of the general principles of chemistry with particular attention to industrial applications.

INTRODUCTORY BIOLOGY **4 credits**

Prerequisite: None; high school or college chemistry recommended.
Five hours per week, including laboratory.

A consideration of the principles of biology with emphasis on a molecular approach to the structure and function of living organisms.

HUMAN ANATOMY AND PHYSIOLOGY I **3 credits**

Prerequisite: Introductory Biology or high school biology recommended.
Two lectures and one two-hour laboratory period each week.

A study of the structure and function of the human skeletal, muscular, nervous and circulatory systems.

HUMAN ANATOMY AND PHYSIOLOGY II **3 credits**

Prerequisite: Human Anatomy and Physiology I.
Two lectures and one two-hour laboratory period each week.

A structural and functional approach to the digestive, respiratory, excretory, endocrine and reproductive systems. A survey of the embryology of the major body system.

GENERAL MICROBIOLOGY **4 credits**

Prerequisite: Introductory Biology or high school biology recommended.
Two lectures and two two-hour laboratory periods each week.

Introduction to microbial life with emphasis on morphology, culture techniques and the biochemical activities of bacteria, viruses and fungi. A consideration of human disease producing organisms with regard to their infection and resistance.

MICROANATOMY (HISTOLOGY) **3 credits**

Prerequisite: Human Anatomy and Physiology I.
Two hours lecture, three hours laboratory each week.

The general microanatomy of human tissues and organs with special attention devoted to histophysiologic aspects.

NUTRITION **2 credits**

Prerequisite: Basic Food Science or enrollment in Dental Hygiene.
Two lectures each week.

A study of the essential nutrients and their values in various food groups; their functions in the body, and how to determine the food needs of the individual.

BASIC MATHEMATICS 3 credits

Prerequisite: None.
Three hours each week.

A study of basic mathematics with attention given to operations with whole numbers, fractions and mixed numbers, decimals, ratio and proportion, percents, signed numbers, measurement and square root. This is a developmental course designed for those students who believe that they need to review and improve their knowledge of the fundamentals of mathematics.

TECHNICAL MATHEMATICS I 3 credits

Prerequisite: One unit of high school algebra
and one unit of high school geometry.
Three hours each week.

Course content includes standard notation and use of slide rule including multiplication, division, powers, roots. Operation of algebraic expressions and fractions. Manipulation of physical units, appropriate to engineering applications. Algebraic solution of linear equations in one unknown. Cartesian coordinate plane. Slope of a straight line. Determining linear equations from given conditions. Graphical solution of two or more linear equations.

TECHNICAL MATHEMATICS II 3 credits

Prerequisite: Technical Mathematics I.
Three hours each week.

Definitions and laws of exponents and radicals. Operations of radical quantities, including the complex number j. Solution of quadratic equations by factoring and the quadratic formula. Graphs of quadratics and the discriminant. Identification and approximation of roots; interpolation. Exponential functions and their graphs. Change of base. Logarithms and their use in multiplication, division, powers, and roots. Use of tables and slide rule. Vectors on Cartesian coordinate plane, definition of trigonometric functions. Functions of angles reducible to first quadrant angles. Trigonometric functions of special angles.

TECHNICAL MATHEMATICS III 3 credits

Prerequisite: Technical Mathematics II.
Three hours each week.

Course content includes trigonometric computation; angular measurement in degrees and radians. Use of tables and slide rule. Solution of oblique triangles. Sine law. Cosine law. Graphs of trigonometric functions. Complex number plane. Complex numbers as vectors. Operations on complex numbers. Powers, roots; De Moivre's theorem. Trigonometric functions. Binomial expansion.

TECHNICAL BUSINESS MATHEMATICS I 3 credits

Prerequisite: One unit of high school algebra.
Three hours each week.

This course provides the mathematical foundation for all of the Business Technology programs. Topics included are: operations with polynomials, factoring, fractions; exponents and radicals; graphs, quadratics, progressions; simple and compound interest with emphasis on the 6 percent—60 day method.

TECHNICAL PHYSICS II 4 credits

Prerequisite: Technical Physics I and concurrent
with or preceded by Technical Mathematics II.
Three lectures and one three-hour laboratory
period each week.

The fundamental principles of sound, light, electricity and magnetism applied to technology. This course also offers a descriptive introduction to technical applications of atomic and nuclear physics.

COLLEGE ALGEBRA 3 credits

Prerequisite: One and one-half units of high
school algebra and one unit of high school
geometry recommended.
Three hours each week.

This course is basic to most scientific endeavor. Topics included are: quadratic equations; ratio, proportion and variation; mathematical induction; binomial theorem; complex numbers; theory of equations; determinants and elimination theory; progressions; inequalities and partial fractions.

TECHNICAL PHYSICS I 4 credits

Prerequisite: Concurrent with or preceded by
Technical Mathematics I.
Three lectures and one three-hour laboratory
period each week.

A study of the physical properties of matter, mechanics and heat. This course stresses applications of physical laws to problems in technology. This is a non-calculus course which features much problem-solving and laboratory work.